The Western Journal

OF THE

MEDICAL AND PHYSICAL SCIENCES.

FOR OCTOBER, NOVEMBER, & DECEMBER 1835.

ESSAYS AND CASES.

Art. I.—Fistula of the Urethra.

Case of Calculi in the Urethra and Bladder—False passage—Imperforate Urethra—Successful Operation. By Doctor R. Estep, of Paris, Ohio.

Aug. 14th 1834.—Was consulted by David Neidegh, aged 30 years, laboring under symptoms of Calculus, severe paroxysms of which he had been subject to for the last 15 years.

Symptoms present.—Countenance indicative of extreme pain and anxiety, colorless and rather bloated; pulse feeble and frequent; foul tongue; incessant and painful micturition; in short, a constitution wrecked, and rapidly sinking under the effects of intolerable irritation. On examination of the parts, a calculus, upwards of an inch in length, three fourths of an inch in diameter, of an irregular oval form, is manifest at the bulb of the urethra, where patient is conscious of having felt it, nearly from the commencement of his sufferings. The obstruction occasioned by this stone renders the operation of sounding out of the question; but by the introduction of

a finger into the rectum, both tumefaction and crepitation unequivocally proclaim the existence of a plurality of calculi within the cyst.

The operation of lithotomy is proposed and acceded to; but owing to the warmth of the season and the very unpropitious condition of the patient, a course is adopted, with a view to palliate symptoms, and in some measure improve the general health.

Aug. 30th. Patient worse—has discontinued my prescription, and in the vain hope of dissolving the stone, adopted fanciful remedies at the suggestion of ignorant persons. An ulcerated aperture has formed at the anterior extremity of the membranous portion of the urethra, where the stone is lodged, through which most of the urine passes. Patient is clamorous for the operation, which owing to his sinking condition, together with his obstinacy in refusing to pursue a correct course, is finally decided on.

Sept. 4th. Proceeded to patient's residence, prepared to operate, and after administering an injection and a large dose of laudanum—disposing my instruments in order, and binding and supporting the patient in a proper position, took my seat. It may not be improper here to observe, that, owing to the impossibility of sounding, the main operation of cutting into the cyst, could not, as yet, be irrevocably determined on. Notwithstanding, I made my first incision as though I had so determined; i. e. beginning over the stone in the urethra, I continued it down on the left of the raphæ, and terminated at a point between the tuberosity of the ischium and the anus. On removing the stone from the passage, I arose from my seat, and without difficulty introduced the sound, convincing myself and all present of the certainty of stone. Removing the sound and substituting the grooved staff, I resumed my seat, and proceeded to divide the cellular tissue and transversalis muscle, in doing which, two branches (one of considerable magnitude) of the pudic artery were divided, but instantly secured with ligature.

Pursuing with my scalpel the groove of the staff, and the scalpel with the index finger of my left hand, I speedily divided the prostate gland, and found my way into the cyst. Introducing a pair of forceps of the middle size, I grasped and withdrew a very irregular, horned calculus, weighing three drachms eighteen grains, the posterior surface of which was worn smooth by attrition against its fellow, which I removed by a second introduction of the forceps, weighing three drachms. They are both of very angular form; and of a hard, and coarse surface.

Having assured myself that nothing more remained in the cyst, I injected a weak and tepid decoction of flax-seed introduced a catheter, unbound the patient, applied lint and a T bandage, and put him to bed in fine spirits.

The only cutting instruments I employed were, a common pocket-case scalpel, the blade made steady in the scales by a ligature, and a curved bistoury, to enlarge the aperture from within.

Sept. 5th. Patient doing well; passed a comfortable night.

7th. Still improving.

10th. General health good—eats and sleeps well.

13th. A perceptible increase of flesh.

15th. Wound healed, with the exception of that portion occupied by the stone in the urethra, which, on careful examination is found to have lost its original anatomical character, and become a hard cartilaginous sac—scarified the wound with a scalpel.

30th. No improvement in the wound; general health perfectly restored—applied Arg. Nit. and ordered it repeated three times daily.

Oct. 3. Wound as formerly; refreshed the lips; applied two sutures; removed the catheter, and ordered it replaced every alternate day.

7th. Urine follows the sutures; no adhesion; removed the stitches, and applied Ox. Mur. Hyd.

10th. No improvement. From this time on for three months I made trial of every irritating material I could think

of, as well as the absence of all of them; Arg. Nit.; Pulv. Canth.; Nit. Acid; Rub. Precip.; Ox. Mur. Hyd.; Ung. Sab.; Lap. Inf. etc. — each, in every degree of activity, was resorted to with much the same results — nothing like granulations or adhesions could be instituted — the lips of the wound skinned over with a kind of mucous membrane, the urine passing in drops through the aperture, without the slightest control of the patient, who is going about in excellent health, but in a most loathsome condition.

Conceiving that time might restore the parts to their original structure, I now determined to let him rest, and after carefully impressing him with the necessity of keeping the passage open by the introduction of a bougie or catheter two or three times a week, took my leave.

May 20th 1835. Notwithstanding the cautions I had given, the patient has, through sheer neglect or indifference, permitted the natural passage to become obliterated at its posterior extremity, to the extent of an inch — the artificial opening remaining as I last saw it. Told the patient I could do nothing for him, unless he would take a room in the village where I could see him at pleasure.

June 9th. Patient having come to town, I proceeded to operate in the following manner. Having supplied myself with a canula seven inches long, furnished with a blunt piston to facilitate its introduction, and a stilette with cutting edges, similar to a trocar, I placed the patient on the side of the bed, his head elevated, and his feet resting on chairs. Introducing the canula with its blunt piston, I applied a cork through the wound to its extremity, and adjusting its direction so as to correspond with the original passage as nearly as possible, I made firm pressure between the end of the canula and the cork — withdrawing the blunt piston and introducing the stilette, I pushed the latter forcibly through into the cork, and by one thrust restored the passage!

The next object, and that which had hitherto baffled every endeavor, was to close the artificial opening, which I find in as unpromising a condition as ever. After contemplating and

rejecting every method with which I was acquainted, the following suggested itself to my fancy; and was no sooner suggested than adopted.

Providing myself with two little cylindrical pieces of wood, half an inch longer than the aperture to be closed, five lines in diameter, rounded at the ends and covered with muslin, I made two little perforations through each, seven lines apart, capable of receiving a strong needle and ligature. Arming then a ligature with a needle at each end, I first passed a needle through each of the holes of one cylinder, then through the lips of the wound at a corresponding distance from each other, (the lips being previously cauterized with a red-hot iron,) and finished by passing the needles through the remaining cylinder, over which the ends of the ligature were securely tied.

From this moment, not one drop of urine flowed through the wound, but kindly pursued its course through the newly-made urethra. A perfect cure is the happy result, and the patient has acquired a pretty comfortable control over his discharges, having to urinate but two or three times during the night. The principal object in detailing the above case, is to give publicity to the last (and in this case, only successful) method of procuring a re-union of parts so disinclined to re-unite. The writer feels the utmost confidence, that, it will answer many valuable purposes in practical surgery; and that too, in cases heretofore almost or quite intractable: such as urinary and salivary fistula, hare-lip, lacerated perineum, *et cetera*.

It may be said, that this is but a modification of the old "quilled suture:" be it so, but that modification is conceived to be a very important one. Let it be remembered, that in the application of the quilled suture, the two strans of ligature which literally surround the quills, have a natural and perpetual tendency to separate from each other to the distance of the quills, or in other words, each seeking to become a straight line. Now in any case analogous to the one above described, they would permit the fluid to pass between them, thereby,

if it should close one aperture, creating four new ones. Whereas the present, (which I shall denominate the inflexible compress suture,) has the exactly opposite tendency, of closing and compressing the perforation made by the needles, at the same time that it holds the lips of the wound securely in contact.

Paris, Stark County, O. Oct. 22, 1835.

Art. II. — Wound of the Heart.

Case of a Gun Shot Wound of the Heart. Reported by R. P. Simmons, M. D. for the Western Medical Journal.

On the 21st December, about five o'clock, P. M. an affray took place, between Charles F. Gedney and Isaac Maguire, in which the latter was shot in the breast with a small pocket pistol, loaded with a bullet, of the size of seventy-four to the pound.

No evidence of a mortal wound was perceived for the moment, and Maguire, with strength and agility, pursued his antagonist, in his attempts to escape, for some rods, when he became faint and fell. At this stage of the catastrophe Dr. Whitman saw Maguire, dressed the wound, and ordered the necessary management for the time.

I was then requested to visit, and take charge of the case, which I promptly did, and saw the patient for the first time, about two hours after the occurrence.

On examining the wound, it was found that the ball had entered the body, between the sixth and seventh left ribs, at their junction with the sternum, and on making attempts to ascertain its direction, I was soon satisfied that it was beyond the reach of extraction.

The symptoms presented at this time, were referable, not only to some important organic lesion of the viscera of the

chest, but also indicated a sympathetic or secondary affection of the brain. The temperature of the skin was very much below the natural degree, and it exhibited a livid appearance, particularly about the face and lips — no pulse was perceptible in any position of the arm, nor even in the carotids — there was excessive vomiting, accompanied with two or three free and copious evacuations from the bowels, the patient raising from his bed to the stool with surprising strength and activity. About this time a short but perceptible rigor came on, succeeded in a little while by pulsation in the arteries, and an elevation in the temperature of the body. The mind suffered from severe apprehension, but the patient was unable to look back upon the scene, or to have the most indistinct conception of what had transpired; he made frequent and importunate inquiries, to know how, where, by what hand, and for what cause, he was thus prostrated, and when as often informed, was still unable to associate the present with the past circumstances in this unfortunate occurrence.

The only *therapeutic* measure instituted at this time, was Tinct. Opii ʒss, with a little brandy. and water, to be given *pro re nata*, with warm applications to the extremities, and the injunction of a quiescent posture of the body.

22d instant, eight o'clock: — visited the patient this morning. Pulsation had fairly returned to the wrists, numbering only hundred in the minute, and affording some expectation that re-action would become established. The temperature of the body considerably elevated, but great paleness of the face, livid lips, white tongue, great thirst, some pain and *distress* in the chest, and was unable to lie in any other position than on his back. When no attempts were made to change his posture, his respiration was easy, and the pulse more regular and free in its beats. Mind still unsatisfied, and had no recollection of any thing that had happened.

Prescribed the strictest antiphlogistic regimen. At one o'clock, P. M., appearances about as they were at our former visit, except a little more acceleration in the circulation, the pulse, numbering one hundred and five.

Five o'clock, P. M., four hours after, saw the patient, and notwithstanding ʒxxx of blood had been drawn from the arm during the *interim*, by Dr. W., there was about the same force in the circulation as at our former visit. Pulse one hundred and five, regular, and quick in its beats. Temperature a little above that of health, thirst excessive — lividness of the face and lips the same — great pain and *distress* in the chest and epigastrium. Prescribed a gentle laxative, and acidulated drinks.

At nine o'clock, P. M., saw our patient, when we met Doctor Whitman for the first time, who had been requested to continue his attendance, as *consulting physician*.

No very perceptible change in the condition of the patient. Pulse one hundred and ten, regular, quick, and perhaps communicating to the fingers a little more wiry *jerk*. Thirst unquenched — same painful uneasiness in the chest and epigastrium.

From the regular and gradual elevation in the powers of life from the time that action was restored to the heart and arteries, till the present, we could arrive at no other conclusion, than that the case would terminate in inflammation; our object, therefore, was to obviate, if possible, suppuration or *gangrene*.

Took about ʒxvj of blood, and prescribed Calomel gr. xv., Pulv. Dov. gr. viij., Anti. Pulv. gr. iij., to be be taken at one dose.

23d inst. — Saw the patient this morning at half past eight o'clock. Rested pretty comfortably through the night; had two hours undisturbed sleep; pulse still quick in its beats, a little hard, but without much force, and one hundred and five in the minute. Thirst intense; countenance pale; lips livid; tongue and gums white; no mitigation of the pain and *distress* in the chest. Had no evacuations during the night. Mind still unsettled. Prescribed Sulph. Magnes. ʒj., Tart. Antim. gr. j., mixed and dissolved in one pint of water; one table spoonful to be taken every two hours.

Two o'clock, P. M. — Patient had taken twice of the saline

mixture, was considerably nauseated, and vomited two or three times, when he discontinued the medicine. The symptoms of pain, restlessness, thirst, &c., not in the least degree mitigated. Pulse one hundred and ten, quick, and a little hard. Took about ʒxx of blood, and ordered the Sal. Mix. to be taken in smaller doses.

Seven o'clock in the evening, in consultation with Dr. W.. found the patient about in the same state as when we left him five hours previously, except that the pulse had less force and frequency. No evacuations from the bowels during the day and night previous. Prescribed Ep. Sal. and Senna in small doses.

24th inst. — Nine o'clock, A. M., saw the patient agreeably to appointment. The medicine had operated three times during the night, unloading the bowels of much feculent and bilious matters, still there was no amelioration in his condition. The same painful *uneasiness* in the chest was complained of. Thirst unquenchable. Pulse one hundred and five. Ordered diluents and Emp. Canth. to be applied to the chest.

Three o'clock, P. M. Visited the patient. Pulse one hundred, and communicating to the fingers a very peculiar jerk in its beats. Respiration, for the first time we noticed it, a little uneasy. Antiphlogistic treatment continued.

At seven o'clock, the usual hour for our evening consultation, we again visited our patient, and to state the symptoms would only be to repeat what has been more than once repeated, during the course of this narration. Prescribed Cal. ϑj., Pul. Dov. gr. x., Antimo. Pulv. gr. iv., mixed and divided into three papers — the first to be taken at eight o'clock, the second and third as occasion might require.

At eleven o'clock was called on to visit the patient in great haste. Found him laboring under violent efforts to vomit, with increased pain in the chest and epigastrium. Prescribed Sulph. Morph. gr. ss., in six pills — one to be taken, and repeated if relief were not obtained.

25th inst. A. M. — Sickness alleviated in some degree. Pulse intermittent, and feeble; countenance distressed and

cadaverous; thirst still the first and the greatest complaint; some pain, and vomited when more than one spoonful of drink was taken. Ordered wine whey, with sinapisms to the extremities.

Twelve, M. — Pulse scarcely perceptible, and continued to recede, with a corresponding dimunition in all the powers of life, till seven o'clock, P. M., when death in its *mildest form*, terminated the scene, being ninety-seven hours after the wound was inflicted.

Post obit examination. — Fifteen hours after death we proceeded to the examination of the body, by making an incision from the superior part of the sternum, and as far down on either side of the abdomen as the lumbar region. The abdominal muscles were then turned aside, and a general view taken of the abdominal viscera, and lower surface of the diaphragm, all of which presented a healthy aspect. The integuments, and muscular covering were now dissected from the ribs and sternum, and we found, as before stated, that the ball had entered the thorax between the sixth and seventh ribs, at their attachment to the sternum. There was considerable extravasation around the wound, and the tip of the cartilage of the sixth rib was detached from the sternum. The cartilages of the ribs, and sternum were then removed, bringing into view the pleura and anterior mediastinum, both structures exhibiting strong marks of inflammation. A little to the right, and exactly corresponding to the external wound, was traced the passage of the ball through the mediastinum, the whole anterior portion of which was carefully removed, with the adhering portion of the pericardium. The latter membrane was much injected, and its whole internal parieties completely covered with a continuous layer, resembling very much in appearance the deciduous membrane of the gravid uterus.

This adventitious membrane, lining the internal surface of the pericardium, and giving a complete envelope to the heart, was so firm and resisting in its texture, that it required considerable force to separate it.

The heart was next examined, which appeared in its natural

position, and the pericardium and adventitious membrane being removed, there appeared on its anterior and right lateral surface, about two and a half inches from its apex, a small indentation, resembling very much the eschar of a recently healed wound. A ligature was now applied to the vena cava, and the heart removed from the body. At first sight it did not appear that there was any solution of continuity in this organ, but when a small blunt pointed probe was slightly pressed on the centre of the wound, it readily passed into the right ventricle. The ventricle was now laid open, and on examining its internal parieties, the wound exhibited a more open and lacerated aspect. Thus far in our examination the ball was clearly traced, and we were well satisfied that it had penetrated the right ventricle, but as it could not be found there, nor any marks of its forcible exit presenting, we were unable, for a time, to account for the phenomenon. The right auricle was next opened, and its internal structure examined, without affording any signs of a single fibre having been wounded, in the slightest degree.

We will here notice, that both the right auricle and right ventricle were nearly filled with coagulable lymph, which extended into the vena cava ascendens, some distance.

There was no blood found in the cavity of the thorax, nor within the pericardium.

The heart was macerated a short time, when T. P. Hotchkiss, one of my students, on examining, noticed a small wound in the centre of the tricuspid valves, which was confirmed by all present and afforded a satisfactory solution to the problem.

It was now so natural to conclude that the ball had descended into the vena cava ascendens, that it would have been denying the very first law of physics to have doubted. The vein was accordingly explored by Dr. W., as far down as its bifurcation when, the ball was detected, fairly within the right iliac branch. Thus, the ball entered the right ventricle of the heart, passed to the right auricle, through the tricusped valves, and then by its gravity descended into the vena cava ascendans and was found lodged in the right iliac portion, about half an inch from its bifurcation.

Although the annals of Medical Surgery, do not perhaps furnish a parallell to this truly novel case, I am nevertheless aware, that there have been many instances of more extensive gun shot, and other wounds of the heart, when death was not the immediate consequence. One of these and perhaps the most extraordinary case on the pages of medical record is to be found in Dorsey's elements of Surgery, as related by Dr. Babington, where a marine on board a ship of war received a bayonet wound of the heart and lived nine hours.

"Upon dissection it was found that the bayonet had penetrated through the integuments, the abdominal muscles, and peritoneum, had pierced the colon, the stomach, the left lobe of the liver, the diaphragm, and indeed the thorax at its centre. Immediately within the breast, the pericardium had presented and yielded the instrument a ready passage to the heart. The right ventricle then received it. The point was thrust in at the lower part of the ventricle and had forced its way out near the valve. From the heart again, passing the pericardium, it pierced through both the upper and middle lobes of the lungs, but even these were insufficient to detain it. It forced a passage on the right side, near the sternum between the cartilages of the second and third ribs, and had sheathed its point beneath the pectoral muscle. That muscle was slightly wounded, but the integuments above it were unhurt. A little bloody serum was found in the cavity of the belly, but scarcely any pure blood, the pericardium contained a little blood. The right side of the heart contained above two quarts of blood, partly in a fluid, and partly in a congealed state."

Cincinnati, January 1*st*, 1836.

Art. III.—Lesions of Sensation and Volition.

History of a case of Cerebral Disease, attended with many uncommon lesions of Sensation and Volition. By T. N. Maddox, M. D. of Louisville, Kentucky. (Communicated through Prof. Harrison.)

C. W. T. æt. 26, has rather a robust appearance, and has been very susceptible to cold and consequent coughs, since 1824, at which time she had scarlatina. On the 23rd March 1826 her father died of a paralytic stroke; she had then a "fit" which lasted five hours, and which was followed by a stupid dull sensation of body, a prickly feeling in the right arm, leg and side, and an acute pain with sense of pressure on the superior and posterior part of the head. August 20th, 1835, she was attacked by an intermittent disease of obscure character, of the tertian type; attended by pain in the head, back and knees; cold feet and legs; and a numbness and prickly sensation in the right side. When taken she was at her brother's in the country—where she remained ten days: during her stay she took two doses of calomel and one of salts, without improvement or change: she then returned to town, and took another dose of calomel without benefit. On Thursday, September 10, instead of an expected chill, she was convulsed, at 3 P. M., particularly in the upper extremities, more in the right than left side; feet motionless; face flushed; copious discharge of frothy saliva from the mouth; teeth clenched; suppression of urine during the paroxysm, and for forty-eight hours thereafter. The "fit" lasted four hours. At its termination the power of articulation was entirely gone; she complained, in writing, that half her tongue was cold, stiff and paralysed, though she protruded it and masticated her food with facility; her appearance was nearly natural, she rose when her bowels were moved, ate something, and expressed, in writing, the fear that she should never again be able to speak.

The following Saturday, at 3 P.M. she had another paroxysm, which lasted five hours and a half. The convulsions were more general and more violent, than in the preceding paroxysm, particularly in the feet; at its subsidence she complained of violent pain in the top of the head, which felt as if it were alternately opened and closed, with a stiffness and loss of power of the right shoulder. On Sunday at noon, she had another paroxysm, which continued until 8 P. M. It left her hemiplegic on the right side, except the thumb and two smaller fingers, with which she continued to write. She suffered from some pains in the bowels, which lasted several days, and was unable to rise from bed. On Tuesday, at 8 P. M., she had another paroxysm, which continued four hours, deprived her of the use of the thumb and smaller fingers of the right hand and left her deaf in the right ear. The convulsions were uncommonly violent, and she apparently ceased to breathe for twenty minutes at a time. Her attendants believed that she was dead, which error was only corrected by the continuance of the heart's pulsations. On Thursday she had another paroxysm, which left her deaf. From this period, she had a severe pain in the eyes, which greatly augmented the lachrymal secretion — the tears were occasionally so abundant, that they coursed their way over her cheeks. During the week she had several paroxysms which were so mild that they made no distinct impression on the minds of her attendants, neither did they aggravate her sufferings. On Thursday, September 24th, she complained of giddiness; was somewhat delirious in the morning; made in writing incoherent remarks; tore her hair; kicked violently with her left foot; threw off the bed clothes, and induced the family to conclude that she was insane. At 10 A. M. she had a violent paroxysm, which lasted until 5 P. M. — during this period she stared wildly; her head drawn backwards; opened and closed her eyes with great difficulty, which remained in either condition for hours at a time. Light seemingly did not affect them, nor did the contiguity of foreign bodies cause her to wink them. During this paroxysm a very copious and inspissated discharge of

tears (in consistence resembling pus) took place, which is described as possessing a scalding property. This discharge continued eight days. At the subsidence of this paroxysm she was blind, though her eye-lids were as widely separated as possible. Her memory was then more acute than in perfect health; her sensibility to impressions extraordinarily delicate; and the sense of touch in the left hand, and of feeling in the left arm and side of the face astonishingly discriminative: for instance, she readily recognised all persons with whom she had previously had an interview, by some peculiarity of conformation or dress; and distinguished physicians from other persons by their manner of examining as to the dryness or moisture of the skin. After filling a slate with writing, she traced line after line, expunging superfluous words, and correcting mistakes of every description, with as much accuracy as she could have done with her eyes. The right extremities were wholly immovable. On the following Monday she was, bled by her physician, with the consent of others, to three ounces, which removed the prickly sensation of the right side. A day or two after the last paroxysm, she commenced spitting blood, which continued in greater or less abundance until the 1st October, when she had a very severe paroxysm; commencing at 4 P. M., and lasting two and a half hours. It was exceedingly violent, and attended by extreme difficulty of breathing and swallowing. She was frequently and violently convulsed, more in the left than right side; discharged frothy saliva from the mouth in abundance; with clenched teeth and a fixed immobility of the right extremities. It was apparently produced by grief, at the recognition of a fond mother; her eye-lids have been closed since this paroxysm, and are not influenced by the volitions of the patient. She thinks that at the subsidence of this paroxysm, she had a blood-vessel of the breast ruptured, from the fact that she spit quantities of blood; the quantity was so great that she was constantly engaged, either in spitting or swallowing, and was accompanied by an apprehension of immediate suffocation, of four or five days duration, during which time she required the room, to be freely

ventilated and fanning from her attendants, whom she besought not to place her in a recumbent position, as she was confident that in that position suffocation would inevitably ensue. She was unconscious during each of the paroxysms. Her physician repeatedly announced to the family that the case would have a fatal termination, and for the two last weeks had discontinued his visits and prescriptions: — we learned these particulars from the family at our first visit. On Monday, October 26th, Dr. Murray was requested to visit this lady, and was so kind as to invite me to see the case with him, which we saw for the first time on Tuesday, October 27th. She solicited us to take charge of her, stating that her former physician had deserted her. Perhaps it will not be improper to state here, that four or five physicians, who visited her previous to this period, believed that the case was irremediable, and openly announced the opinion. We believed that death would probably close the scene, and asked permission to examine the head in that event.

Oct. 27. She is as for several weeks past, dumb and blind; is propped up in bed; countenance nearly natural; eyes closed; tremors of the eye-lids; an inability to separate the eye-lids, or direct the pupil downward when separated; bowels torpid; pulse seventy-five, laboring; head hot; feet cold; skin preternaturally warm and moist; tongue nearly natural; urinary discharge tolerably free and unusually limpid; sleeps little — perhaps an hour each night, and is much disturbed by unpleasant dreams; though absent and forgetful when well, her memory is now exceedingly acute, and her expressions unusually felicitous; no appetite, though she takes food and stimulants to remove an unpleasant nausea, and support her exhausted energies; her friends communicate to her by writing on the left hand or face; writing on the face, however, produces uneasiness. She frequently anticipates the meaning before the communication is finished, and eagerly seizes the pencil to reply. She writes very correctly, and perfectly straight, with her left hand, and rectifies any error of orthography or punctuation with facility. Her hand is so

tremulous, that wine and water or coffee, must be freely used to enable her to write a communication. She understands nothing written on the right hand; she suffers from pain in the head, which is often acute; and from pain in the back, which is aggravated by moving or being moved. By the sense of touch, she readily recognises her friends, and all persons she has seen the second time; and when visited by a particular friend, burst into tears. She has regularly menstruated at intervals of three weeks, since the establishment of this function, and has much pain and restlessness on these occasions. It continues usually a week. The week preceding its appearance she is languid, indisposed to action, and frequently vomits, more especially on the day previous to its accession. It leaves her weak, exhausted and depressed, which state lasts usually another week, so that she is scarcely ever well.

This individual has generally a keen appetite in health, which she has been in the habit of indulging; possessed a robust and vigorous constitution, led a sedentary life, and usually enjoyed excellent health. She is constitutionally gloomy and despondent, and, like all persons of this temperament, is subject to occasional exaltations and depressions of spirits. In her gloomy moods she has often withdrawn from the society of friends, and brooded with intense fixedness on her multiplied calamities. In the morning of life, a kind and indulgent father provided for her; but she was scarcely able to appreciate his kindness, ere death snatched him from her. The distribution of property, according to will, was unsatisfactory to some of the heirs, who believing that the law would dispose of it more equitably, endeavored to nullify the will. This attempt bred family dissensions, and ended in disappointment. She then sought an asylum from family contentions in the house of a favorite brother, who kindly received, and carefully educated her — her education was no sooner completed, than death tore from her this brother. Calamity thus followed calamity, until all her fondest hopes were blasted — all her brightest anticipations disappointed, and she left an unfriended being.

Her grief, her seclusion, her sedentary habits, her destitution of friends, the cruelty of a brother, and the faithlessness of a connection, made her an easy prey to melancholy; aggravating her original gloominess, and rendering her more than ever the victim of despondency. In addition to this, she frequently suffered from the most excruciating head-aches — an effect to the production of which the preceding causes are fully adequate, and which is always aggravated, by a simultaneousness in the occurrence of these circumstances. Her indispositions are all felt most sensibly in the head, and this was particularly the case in her late intermittent attack. Had she been properly treated, the convulsions, perhaps, would not have occurred.

We conceived that the convulsions, and subsequent phenomena, were the result of a lesion of circulation of the encephalic vessels; which, but for the copious discharge of blood from the lungs, would, in all probability, have resulted in fatal Apoplexy. With this view we directed that her head should be shaved, and that three cups be applied to its occipital portion; her feet to be rubbed with a saturated decoction of cayenne, and a pill containing two grains of aloes, two of scammony, and one of gamboge, at bed time, and, in case it failed to operate by morning, two more.

28th. The three pills procured two evacuations, of good character, after cupping less pain and tension of the head, particularly the eyes; skin cooler. R. Cloths wrung out of cold water to head; external warmth to feet; and two more pills at bed time.

29. During the night, the medicines operated twice; slept better than usual; less pain and heat of head; less languor; capable of greater effort; "feels sensibly better;" pulse seventy-five, less labored, more compressible, less contracted; eyes painful; less tremor of the eye-lids; skin cooler; R. three cups to right side of head; a pill at an hour's interval, until she has taken three; cloths wrung out of iced-water to head; continue stimulating applications and external warmth to feet; diet light, unirritating and digestible: — 6 P. M., cupping has

lessened pain in the head:—℞. Sulph. Morph. gr. ¼, Scammon. grs. ij., Aloes grs. ij., ft. pil. i. at bed-time.

30. Slept better last night, and was less disturbed by dreams; had two alvine dejections, of a dark colour; pulse freer and more compressible; tongue clean; asked for tea and corn cakes, so soon as she awoke this morning; has more control over the muscles of the right extremities; some pain and soreness about the right elbow, more especially on moving the arm; "imagines that she sees a little, though she believes it is all imagination;" is delighted that she can partially elevate the eye-lids; has still some pain and pressure in the occipital region. ℞. three cups to posterior portion of the head; three pills at bed-time; friction of right elbow and leg with decoction of cayenne; continue cold applications to head, and external warmth to feet.

31. "Some soreness of the head this morning;" no pain; much pain in back and bowels; medicine operated several times—once very copiously; pulse eighty-two, freer and more compressible; says "that she is much better;" "that she has had a cerebral affection for eight years; that she desired her head shaved and cold applications to it when first taken, which were denied her; regrets that she has been so long deprived of the facilities of seeing, hearing and speaking—but hopes soon to furnish her friends and physicians with an account of the origin, progress and treatment of her case." ℞. three cups to head; ℞. Aloes Socot., Scammon. aa grs. ij., Gamboge gr. j., Sulph. Morph. gr. ¼, in a pill at bed-time; a blister to each ankle. ℞. Tinct. Opii, Aqua Ammon., Ol. Olivar., aa ʒj., Ol. Caryoph. ʒjss., ft. Liniment, for right arm and leg.

Nov. 1. Patient slept more and better last night, has more control over the muscles of the right arm and leg; can elevate the eye-lids considerably; of which there is now no tremor, directing the pupils downwards at the same time, so much as to make it partly visible; "says that the air or light gives her pain in the eyes;" all odors are disagreeable; appetite improving; skin pleasantly cool; "is annoyed by the walking of persons across the floor, which jars her bed;" bowels not

moved to-day; pain in the lumbar region. ℞. three pills this morning, and another at bed-time, with a grain of the Extr. Hyoscyam. — continue liniment, cold applications to head, and external warmth to feet. We directed that the room should be darkened, and the number of visitors lessened.

2. Slept well; medicine operated four times; she "feels extremely weak;" pulse eighty, small, and gives rather a jerking sensation; no pain, except in the lumbar region, which is not very annoying; no urinary discharge to-day. She affirmed, that a medical gentleman, who visited her with us was a physician, though she never saw or heard of him before, is "exceedingly anxious to see and speak again;" "expects to receive much of the world's censure;" wept when a friend requested her to correct a mistake in her communication, "because she thought it equivalent to a suspicion of her candor, and an improper indulgence of curiosity." ℞. a pill at bed-time, with ¼ gr. Sulph. Morph., three cups to side of head; continue cold applications, external warmth and liniment; diet, milk and mush, tea and thin cakes, &c.

3. Patient roused the family at day-dawn, "to tell them she could see, though unable to distinguish objects;" pupils much dilated; the free admission of light causes no contraction of the iris, but produces pain; feet warmer; some giddiness of the head without pain; has the usual premonitions of menstruation; discharged a quantity of high-coloured urine this morning; increasing control over the right arm and leg: — after cupping, "said her tongue was very sore on the right side, but not so stiff; and that she had a disagreeable taste in her mouth she could not describe." In her ecstacy at seeing, she forgot her breakfast, which she asked for so soon as she had seen her friends and physicians. ℞. Gum. Aloet, Gum Myrrh. Sulph. Ferri, aa 3ss. Extr. Gentian., Pulv. Zingiber., aa 3j., ft. pill. No. xxx, — one, morning and evening; two purgative pills at bed time; three cups to head; a blister to right thigh near the knee; continue liniment; omit cold applications and external warmth.

4. The blister was so painful that she slept but little last night; some giddiness; three alvine dejections during afternoon and night; "feels extremely weak;" pulse ninety; raised her right hand to her head without assistance; vision improving, though the effort of looking gives pain; called Rachel — an attendant, in an audible tone; can articulate but few words, mostly monosyllables; skin uniformly cool and pleasant; continue emmenagogue pills and liniment.

5. "Dr., for the first time, since I have been sick, I feel something like myself; I can see any object near to me, but it is painful; my tongue and throat on the right side are very sore, — but great is the change in my feelings for the better; I have no longer that strange feeling in my head; — if my throat were less sore on the right side, I think I could speak; something seems constantly drawing my tongue on the right side." Has more control over her arm than leg — can raise her arm to her head and change its position with facility; is fatigued from lying so long in bed, — and is anxious to sit up; bowels moved twice this morning; menstruation commenced; appetite much better; pulse eighty, softer; slept well; discerns objects to-day; the free admission of light produces pain; has great difficulty in understanding what is written on her hand, from a diminution of sensibility in it. In the afternoon complained of giddiness and appeared overcome by fatigue; continue emmenagogue medicine and liniment.

6. Had a tranquil night's rest undisturbed by dreams, menstruation ceased; less soreness of the tongue, though the effort of speaking is painful; the pupil *now* contracts when light is admitted; sees so well that she reads communications on the slate, — understands with great difficulty what is written on her hand, of which the palm and inside of the fingers are very sore; looking still produces pain; pulse softer; appetite good; continue pills as before; two cups to back part of head; liniment to back, spine, and right extremities; inhalation of the vapour of the decoction of Cayenne.

7. Last afternoon and night so much drowsiness and torpor of the brain, that she hardly remembered what she wished

to say; "feels stronger;" complains of a pain on moving between right mamma and ilium; taste vitiated, sometimes bitter, sometimes salt; pulse eighty, good; writes to-day (for the first time since the fourth paroxysm) with the right hand; understands no longer what is written on her left hand; receives communications on her slate, which she reads without pain; is in fine spirits; appetite so keen that she asks for bacon;—continue pills—liniment—and vapourous inhalation: three cups to posterior portion of head.

8. We found our patient sitting up; sees well; saltish taste in the mouth; bowels once moved; tingling in the ears; sleep disturbed last night by unpleasant dreams; called Rachel, and asked for water audibly and distinctly; "thinks that she may recover;" continue pills, vaporous inhalation and liniment.

9. Less tingling — a dull roaring in the ears occasionally; bowels moved twice; soreness on the right half of the body; a desire to change bed; an indefinable susceptibility to impressions--amounting almost to peevishness: continue pills and liniment; omit vapourous inhalation: apply three cups to occipital region of the head.

10. Better.

11. Appetite voracious; spirits fine; some improvement in speaking, though her articulation is yet very imperfect; omit pills; continue liniment; three of the purgative pills at bed time:—we allowed a small piece of bacon for dinner to-day.

12. Some pain when moved; little or no soreness of the tongue or throat; speaks much more easily,—and with a little assistance walked across the room; no medicine to-day; continue liniment.

13. Thinks she heard the town bell this morning; has a constant roaring in the ears—and much hesitancy and catching in speaking, though she no longer uses the slate; hopes high; some soreness of the right thigh, which is painful when moved. R. three purgative pills at bed time; continue liniment.

14. Hears some words, though there are occasional intervals of indistinctness and sometimes confusion of sounds;

thigh less sore and painful; medicine operated freely several times; less impediment in speaking to-day; no medicine; continue liniment.

15. Hears to day perfectly well at intervals, which is followed by periods of entire deafness of four or five minutes duration; less hesitancy in speech; is rapidly improving; says "she feels better than she has felt for ten years;" leg still painful when moved; continue liniment.

16. Better.

17. Hears and speaks almost as well as ever; leg improving; bowels in good condition; continue liniment. A physician, whom she knew for the first time during her blindness, and who was always recognised at subsequent visits, called to see her this morning with us—to our astonishment she knew him not:—her touch was no longer sufficiently delicate to distinguish him from others.

18. Hears, sees, and speaks well; right extremities getting stronger; no pain to-day.

Dec. 12. This lady continued to improve, now walks out and is apparently in good health.

Louisville, Ky., Dec. 15, 1835.

Art. IV.—Club Foot.

Suggestions on the treatment of Club-Foot. By a Correspondent.

From the number of uncured cases of an unfortunate class of invalids, it would seem that the attention of the medical profession should be directed to them for their relief. This is the class of persons who are born with the deformity usually denominated club foot. Whteher it has been from the neglect of their friends, in not calling for surgical aid, or whether the skill of surgeons employed has been baffled, that

so many of this description of cripples are seen hobbling through our streets, I cannot say. But their having grown up uncured, I conceive is full evidence of fault somewhere. From the examinations which I have made of cases of club foot, I am of opinion, that in most instances they admitted of a complete cure, had the proper measures been taken in due season. In most cases that I have examined, there seemed to be no deficiency of parts, but a misplacement from their natural position. Whilst the bones are soft and flexible, and the ligaments susceptible of yielding to small force, this deformity is under the control of the surgeon, and at this period children born with club foot should be attended to. There are, doubtless, different successful modes of treating such cases. I have known the apparatus recommended by Dorsey used unsuccessfully. Whether this was from the fault of the apparatus or the surgeon, I cannot say; but I am inclined to believe, that there can be no shoe fitted with straps and buckles, that is so well adapted to all the circumstances of the case, as other means which we have in our power. It appears to me, that uniform pressure from the toes up the leg is desirable, and it is impossible that this should be done by buckled straps. I have been in the habit of treating the club foot in a different manner from what I have seen recommended in books, and from the success with which I have met, in this mode of treatment, I can recommend it with confidence. This mode is by the use of bandages. To illustrate it I will give the history of a case.

In 1827, A. E. was born with both feet deformed. One foot had the upper part drawn upon a line with the tibia, and the os calcis, presenting downwards, was the only part that could have been used to stand erect upon. The other foot was turned to one side, resembling a completely dislocated ancle; the side and upper part (or which should have been) occupied the place of the sole. The tibia was much curved. As soon as the mother was able to give the necessary attention, I commenced my efforts to remove the deformity. I applied two sets of easy bandages, three fourths of an inch

wide, from the toes to the knees as neatly as I could. To the curved tibia a splint was then applied, and over these were applied two sets more of bandages soaked in paste made of flour. While the rollers were applying, the feet were brought to as near a natural position as moderate force would bring them, and they were retained in this position until the outer bandages became dry and firm. In two or three days the bandages were soaked in warm water and removed and again applied as before, bringing the limbs nearer to a natural position. This was done for a few weeks till the limbs were entirely cured of deformity. The latter part of the time did not require frequent changes of the dressings. The paste bandages applied in this manner afforded a strong and unyielding covering, keeping the limbs in the exact posture desired, incapable of yielding to any force which might happen from accident; setting easy and allowing the most free circulation, producing no irritation, and giving sufficient space for the growth of the limb, from the elasticity of the dry strips between the limb and the external covering. At the present time, it would be impossible for the most careful observer to detect the least deformity, either in the feet or the legs. B.

Art. V.—Memoir on the nature of Miasm and Contagion.

Read to the Cincinnati Medical Society, Feb. 3d, 1836. By John L. Riddell, Adjunct Professor of Chemistry, and Lecturer on Botany in the Cincinnati Medical College.

The age in which we live is distinguished over all that have preceded it, in the advances that have been made in the physical sciences. Men seem to have become convinced, that little value can attach to abstract generalizations; and that the true mode of studying nature, is by following

patiently in her footsteps, watching her silent progress, and developing her manifold and harmonious ways by experimental inquiry. Nature is limitless; — man is finite: — consequently there must be boundless fields of ever-during truth, unmarked by the footsteps of man, and unseen by the telescopic vision of research. Even within what we call the circle of human knowledge, blanks are met with, wide and dreary, and regions which seem shrouded in perennial mist. In contemplating the phenomena of nature, the mind is ever prone to fill up these vacuities with creations of its own; and then combining the real with the imaginary, the known with the unknown, to mould the whole into the form of a general system. But the experience of the world has clearly shown, that hypotheses embracing wide ranges of facts or principles, are exceedingly liable to prove more or less erroneous. They should, therefore, in all cases, be held liable to amendments, to modifications, or even to entire dismissal, upon the development of new facts making such requisitions.

Proudly as we boast of the investigating spirit of the times, very many of the theories and opinions which at this day obtain general assent, had their origin in the dark ages of science, and have been borne down to us by the current of tradition. New and relevant truths are from time to time brought to light, indicating in some instances the propriety of their total abandonment; but the fascinated minds of men are wedded to the prevalent hypotheses, and but too often, the requirements of venerable systems are mistaken for the immutable laws of nature. The novel facts are perhaps doubted, controverted, overlooked, deemed anomalous, or made to bend and accommodate themselves to the favorite theory.

The leading views I am about to offer, have been suggested at various times and by various writers. If I mistake not, however, it has always been unfashionable to believe in them, and still more so to advocate them. When the science of physiology was infinitely more vague than it is now, ere the genius of a Hunter or a Cuvier had brought to light the

structure of the lower tribes of beings, or the microscope revealed its atomic worlds of animate wonders; while chemistry was yet in its feeble infancy, before the nature of the atmosphere had been investigated, or the laws of union in definite proportions determined; then might such doctrines have been considered as resting on slender probabilities. But at this time, with the multiplied results of careful observation and skilful experiment before us, it is certainly far otherwise: wherefore in venturing to stem the current of popular opinion, brooking the intolerance of some, and the ridicule of others, I feel upborne by the consciousness, that my conclusions are indicated by analogies the most clear, and facts the most incontrovertible.

I assume that the matter of contagion is of an *organized* nature, and consequently subject to the same general laws, which regulate the origin, increase, modes of existence, and duration of animal or vegetable bodies. I assume also, that the same is true of the morbific miasms which are exhaled from putrid marshes, and of the occult causes of cholera and other epidemic diseases.

In order that due weight may be assigned to the facts and arguments on which this hypothesis rests, I will first notice some of the prominent points of contrast between organized and inorganic bodies. Organized beings, animals and plants, possess forms more or less rounded, and never exceed in size certain definite dimensions:—mineral or inorganic bodies as a class, have no general determinate form, unless it be the angular one assumed by them in the crystalline condition, and in respect to their size, there are seldom any assignable limits. Organized bodies are made up essentially of the ultimate elements, oxygen, hydrogen, and carbon; or of oxygen, hydrogen, carbon, and nitrogen; in all cases united in a most complicated manner. The composition of individual minerals is always characterized by definiteness and comparative simplicity, though as a class, they embrace all known elementary bodies.

Minerals increase in size by the external addition of particles similar to their own; and the causes which elaborate

and supply these particles, are wholly independent of the bodies which they tend to augment. Animals and vegetables possess within themselves a power of elaboration; they consequently increase in size by the internal assimilation of foreign particles. In all organic structures of the more highly developed types, there exist harmonious and dependent series of vessels, tissues, and organs, which concur in effecting this end. Of this internal conformation, minerals are wholly devoid. The same causes which develope and perfect the organic structure, ultimately put a limit to the duration of individual beings;—whereas all brute matter is endued with the negative attributes and conditions requisite to insure endless perpetuity. Though a finite period of existence is allotted to individual plants and animals, it is believed by many that nature has fixed no bounds to the duration of species. Cuvier and Roget recognize this opinion as a settled point in physiology;—yet I confess it is more consonant with what seems to me the general ways of nature, to suppose that particular species or kinds lose their identity in process of time, by giving origin to modified kinds or varieties; which in turn may long wear the aspect of confirmed species, and ultimately, in like manner, give way to their successors. However this may be, there is certainly no assignable limit to the reproduction, succession, and continuation of organized beings.

I claim for the corpuscles which cause malarious and infectious maladies, trans-microscopic as they are, the humble rank of belonging near the lower confines of organic nature. Perhaps they hold nearly the same grade in respect to animate and sentient beings, which the more simple and minute of the *Fungi* and *Algæ* do to the more perfect tribes of vegetables. Inconceivably minute as they doubtless are, they must yet possess a share of vitality, because like other animals and plants which come under our observation, they have the power of propagating and extending themselves indefinitely. With a view of throwing light by analogy on the possible habitudes of miasmatic molecules, and demonstrating

at the same time the strange and almost incredible capabilities of animal life, I shall adduce a few well authenticated observations on the nature and habits of infusory animalcules:—though in honesty I do not imagine there exist very close resemblances between the animalcules which the microscope displays to our view, and the miasmatic corpuscles which elude its cognizance.

Infusoria is the name of an obscure class of the animal kingdom, characterized more by the minuteness of the beings it embraces, than by any particular features or structure which they possess in common. This appellation was proposed by the Danish naturalist, Muller, distinguished for his acquaintance with this department of zoology, on account of the fact, that myriads of these little creatures always make their appearance in fermenting infusions of animal or vegetable matter. They are, by no means, however, confined to such infusions, being frequently met with on the leaden tiles of houses, in putrefying sores and depraved humors of man and beast, and in one, at least, of the healthy animal fluids. Countless multitudes of a parti-colored, eel-like animalcule, (*Vibrio tritici,*) exist in the pulverulent substance within the glumes of blighted wheat. Dr. Lindley, of the University of London, says, (First Principle of Botany, 329,) that the granules of pollen, (the fecundating dust, elaborated by the flowers of plants,) inclose a mucuous substance, in which is contained an infinite number of exceedingly minute molecular bodies, having a power of active motion. It is now generally believed, that animalcules do not occur in pure fountain water, nor in many of the healthy animal fluids. To account for the occurrence of these animated atoms in particular situations, baffles the most untiring ingenuity of research. Spallanzani made some instructive experiments with a view of determining the condition preclusive of, as well as those most favorable to their production. He placed portions of the same vegetable infusion in different glass vessels. Some were left exposed to the air, others slightly covered, and others hermetically sealed. He found, subsequently, the

greatest numbers of infusoria, in those vessels which were most freely exposed, yet they occurred in the infusions hermetically sealed. Boiling the infusion, though it reduced their numbers, did not entirely prevent their appearing. In one instance he boiled the infusion for an hour, and then hermetically sealed it: after the lapse of twenty-five days, a a few of the smaller kinds of animalcules had been developed. They readily appear under reduced pressure, where the air will support only thirteen inches of mercury.

Some species of animalcules have the power of enduring great changes of temperature in the medium containing them, with apparent impunity. The *Vermiculi tauri*, which inhabit a medium of 103 deg. Fahr., support 5 deg. without death, and retain their vivacity a long time at 32 deg., the freezing point of water. The same beings are not destroyed by raising the temperature to 133 deg. The native medium of the *Vermiculi hominis*, is usually maintained at 98 deg. These vermiculi retain vitality between 32 and 131 deg. The common infusory animalcules are capable of brooking a range of temperature, from the freezing of water, to near 110 deg.

Collateral facts, drawn from the vegetable kingdom, show, in a manner equally striking, the great power sometimes possessed by organic nature, of enduring extremes of heat or cold. Immense fields of scarlet snow, are sometimes presented to the traveller, in the intensely cold regions of the northern frigid zone. Investigation has shown, that the color depends upon millions of microscopic plants, belonging to the order *Fungi*. The *Ulva thermalis*, a plant of the order *Algæ*, and the *Limneus pereger*, a fresh water shell, are found in Gastein thermal springs, where the constant temperature is 117 deg. (De la Beche, p. 13.)

The most mysterious circumstance in the natural history of the infusoria, is the susceptibility which some of them possess, of remaining an indefinitely long time in a perfectly dry, and seemingly lifeless condition.

The same prerogative is enjoyed, to a certain extent, by many vegetable seeds, and by certain worms of the order

Annelida; but the resurrection of animalcules, taking place more rapidly, is far more striking to the observer. "The *Rotifer redivivus*, or wheel animalcule, which was first observed by Lewenhoeck, and was afterwards rendered celebrated by the experiments made upon it by Spallanzani, can live only in water, and is commonly found in that which has remained stagnant for some time in the gutters of houses. But it may be deprived of this fluid, and reduced to perfect dryness, so that all the functions of life may be completely suspended, yet without the destruction of the vital principle; for this atom of dust, after remaining for years in a dry state, may be revived in a few minutes by being supplied with water. This alternate suspension and restoration of life may be repeated, without apparent injury to the animalcule, for a great number of times. Similar phenomena are presented by the *Vibrio tritici*, an eel-like animalcule, which infests diseased wheat, and which, when dried, appears in the form of a fine powder. On being moistened it soon resumes its living and active state.

The *Gordius aquaticus*, or hair worm, which inhabits stagnant pools, and which remains in a dry and apparently lifeless state when the pond is evaporated, will, in like manner, revive in a very short time, on being again immersed in water. The same phenomenon is exhibited by the *Filaria*, a thread-like parasitic worm, infesting the cornea of the horse." (Roget. Physiology. I. 58.)

In the Edinburgh Encyclopedia, article Animalcule, it is stated, that the wheel animalcules have been thus resuscitated from a state of dormant vitality, as many as seventeen times in succession, and that the presence of sand is necessary in the fluid, or they will not revive. That when active, 113 deg. is sufficient to kill them, but when dry, the vital principle is not destroyed unless the temperature be raised to 158 deg.; or if, while in this condition, they be exposed to the intense cold of — 11 deg., they may be subsequently revived. Strong camphoric and terebinthinate odors prevents reanimation.

In no other department of animated nature, are we presented with such strange and anomalous modes of reproduction. Many of the globular *Monades* and *Vorticellæ*, increase by spontaneous and equal division. The living globule will at first appear as if encircled by an equatorial band, which will continue to be drawn more and more tight, until a complete separation occurs; each portion being an independent monad, which in turn is bisected like its parent. In this manner, a mysterious multiplication goes on indefinitely. The *Monas uva* consists of four or five corpuscles in a cluster, by the spontaneous separation of which, the species is propagated. Errhenberg has determined that the smaller monads are near one twenty-four thousandth of an inch in diameter; and he has estimated that there are 500,000,000 of them in the space of a cubic line, or drop of liquid which he examined.

The *Volvox globator* consists of a spherical, membranous sac, filled with liquid, in which float many more diminutive globules like itself. These have precisely the same structure with the enveloping membrane, even to containing within them a series of still minuter spherules. Observers have thus seen the fifth generation in the same individual. The parent always ends its own existence in giving birth to its progeny. The *Gonium pectorale* has an angular, flattened body, containing sixteen corpuscles, which subsequently become distinct animalcules like those in the volvox. A curious being, provided with a beak, was observed by M. Bonnet, in an infusion of hemp, which fixing itself to some solid substance, assumes a spherical form, and rotates irregularly until it bursts into four animalcules. Spallanzani took pains to isolate the egg of an animalcule on a watch glass: in a short time it was developed, became mature, and produced eggs like the one from which it sprung; and these likewise followed the same habits.

It is indeed astonishing to observe how short a time is sufficient, in some instances, to bring these beings to full maturity. An infusion of beet yields a species that increases by detaching obliquely a small piece of its own substance, which, after

the lapse of a single day, is also capable of propagating. Strange as this may appear, the instance is less remarkable than that of the *Vorticella ramosa*, which exercises the power of reproduction, within a few hours only, after having been itself ushered into existence.

So far as investigation has been carried, this proposition is fairly established: that animal or vegetable food is essential to every subject of the animal kingdom. It must therefore follow, if the proposition be universally true, that the *Infusoria* feed on organic substances; and it is probable, that many of them subsist on corpuscles more minute than themselves. Some of them are known, indeed to be carniverous. To adduce an instance, Goeze has seen the *Trichoda cimex*, a bristly, microscopic creature, of an oval form, seize upon and devour the lesser animalcules with great voraciousness.

A belief in the existence of miasmata, or morbific agents in the atmosphere, has long been entertained. When the general constitution of common air was discovered and announced to the world, it was expected that a prolific source of maladies would be found in the varying proportions of its ingredients; but repeated and careful analyses have demonstrated, that the relative quantities of oygen and nitrogen are found to be nearly constant, whether the air be taken from the infected wards of a crowded hospital, from the most pestilential marsh, or from the most pleasant and healthy situation. True, the quantity of carbonic acid in atmospheric air, varies at times from one per cent. to one in a thousand; but these variations seem to have no connexion with the prevalence or production of disease. The amount of miasmatic matter diffused through infected air, must be almost inappreciably small. M. Boussingault, of Lyon, has lately made a series of most careful experiments on the composition of air, procured from highly malarious districts. He has determined the presence of hydrogen, not existing as a constituent of water, to an extent by weight, varying from three to eight millionths of the air examined. He presumes, from other important experiments, that it was a part of something of an organic nature.

In these instances, portions of air were submitted to trial, which, though they contained less than a hundred thousandth part of any thing that could be called miasm, were nevertheless sufficiently imbued with the germs of disease to give rise to the most severe intermittent fevers. So, likewise, the remote cause of cholera may lurk, unappreciated, in the atmosphere. It is well known, that a quantity of contagion, as the virus of small pox, altogether too minute to affect the most delicate balance, is sufficient to develope a disease in the human system, which may propagate itself to an indefinite extent.

A grand and most decisive argument, relative to the probable nature of infectious miasms, may be drawn from the established laws of chemical action and combination. Multiplied researches have demonstrated, that when elementary or compound bodies chemically combine, it is invariably in certain fixed and definite proportions; thus, 108 parts of silver unite with 8 parts of oxygen; 40 parts of potassium with 8, and also with 16 parts of oxygen; 40 parts of sulphuric acid combine with 48 of potash. Consequently, substances, in producing chemical effects, lose *pari passu* the affection or power which enables them to do it: in the same manner as a moving body parts with its momentum in giving motion to other bodies. Suppose I endure, for a while, the action of a drachm of the concentrated solution of caustic potash, on the palm of my hand. The presence of the alkali will cause the decomposition of the dermoid tissues, the elements of which, will be converted into oleic, margaric, and stearic acids, that immediately combine with, and neutralize the causticty of the potash: and thus, at length, the potash will have a limit put to its action, its place being supplied by the various soap-like salts to which it gives origin, and of whose composition it forms a part.

It is after this wise, that the action of every possible dead substance must have a definite limit. A small quantity of such an agent produces only a comparatively small effect, while a large quantity produces an effect correspondingly

large. The unpleasant ulcer which would follow the application of caustic potash to the hand, could not be communicated to other persons by contact;—the morbific cause would not in the slightest degree possess the power of self-propagation.

There is, then, this wide difference between contagious and ordinary poisons, that in the one, the extent of the effect depends wholly upon the quantity of material employed: in the other, the smallest possible quantity is adequate to the production of the greatest possible effect; an effect which may be felt, as in the case of small pox, by millions of human beings. The chemist has power to produce all mineral or inorganic combinations at pleasure, though unable to imitate the more complex results of vital action. Now, if the causes of pestilence be inorganic, why has the virus of small pox, the miasm of cholera, or of any other pestilential malady never chanced to originate in chemical laboratories?

Must there not then, be a degree of vitality resident in the matter of contagion? Is there not a perfect analogy between its unlimited propagation, and the unlimited propagation of animal or vegetable species? What brute force, let me ask, within the compass of inorganic nature, acts unexpended? and where may we find this high prerogative, except as a mysterious endowment of vitality?

The virus of many contagious diseases may be kept in a dry condition for a very long time, being still capable of exciting disease by inoculation. How perfectly similar this is, to the wonderful resurrection of which the dry and shapeless remnants of certain animalcules are capable; and how totally inexplicable on any other hypothesis.

Miasmatic poisons, when applied to the animal system, generally require several days, before the obvious development of any effect. This time, called the latent period, affords a strong argument in favor of the organized nature of the poison; for ordinary poisons never delay their action so long: whereas, if contagion consists of living corpuscles, like the ova of insects or the germs of plants, they would naturally require time for their development and multiplication.

The interesting experiments of Moscati and Boussingault, have shown in my opinion beyond a doubt, that organic matter exists in extremely small quantities, in the noxious air that hovers over marshes. Moscati, a learned Italian, many years ago, suspended in the air, over the rice grounds of Tuscany, a globular glass vessel, filled with ice. An abundant deposition of dew took place upon its surface, which, when collected, appeared at first to be pure and limpid water. There was soon, however, an appearance of little flakes, "possessed of properties peculiar to animalized matters, and, finally, at the end of some days, the liquid putrified completely."

M. Boussingault, in a memoir read to the French academy of Sciences, in August, 1834, details some striking experiments made by him at Cartago, South America. "A little after sunset," says he, "I placed two watch glasses on a table standing in the middle of a swampy meadow. In one of the glasses I poured hot distilled water, in order to wet its surface, and, at the same time, to communicate to it a temperature higher than that of the air. The cold glass, its temperature being lowered by the nocturnal radiation, was soon covered with an abundant dew. The warm glass could not evidently condense dew. On adding a drop of distilled sulphuric acid to each glass, and evaporating to dryness with the heat of an alcahol lamp, I always saw a trace of carbonaceous matter adhering to the glass in which the dew had been deposited, while the glass which had not condensed dew, was perfectly clean after the volatilization of the acid." I may here add, that strong sulphuric acid decomposes and blackens organic matters, in consequence of its affinity for water; causing the oxygen and hydrogen of those substances to unite in the production of water, and leaving the carbon in the condition of finely divided charaoal, which accounts for the occurrence of the black color. The same writer further says, that he soon experienced upon himself the effects of the miasm, whose presence he was endeavoring to prove: for he was attacked with a fever which forced him to interrupt his researches.

(Concluded under the head of Original Intelligence.)

Art. VI.—Monstrosities.

Lesions of Nutrition depending on the irregular Arrangement and Distribution of the anatomical Elements, of which the Solids of the Body are, in their natural States, composed. Andral's Pathological Anatomy, Vol. I. p. 69—122.

By the Assistant Editor.

Although Pathological Anatomy has been cultivated with the utmost zeal, on the continent of Europe, during the last quarter of a century, the study may be said to be still in its infancy in the American schools. Indeed, there is but one in the Union, in which lectures are especially delivered on that branch of Medical Science, although it is every where acknowledged to be the basis of a sound and well regulated professional education. The physician, who is ignorant of the various alterations of structure which it reveals, is unfit for the duties assigned him, although he may carry with him the lettered parchment, together with all the plumage with which it is decked, by the most refined modern taste. It is the study of this department alone, which enables him to detect the various morbid derangements of any or of all the organs; to trace their origin and explain the processes by which they pass through their various stages, and to note their mutual relations, and the order of succession in which they attack the different tissues of the body. But why need we urge the study of this branch of our profession? It will at once be seen, and appreciated, by every lover of truth and philosophy.

Until the present century the history of morbid anatomy, was confined to isolated facts, widely separated from each other, aad mostly buried beneath the general rubbish of medical periodicals. It is true the names of Bailie, Bichat, Corvisart, Laennec, and others, have been intimately associated, for the last forty years, with this department of general pathology; but their observations, however valuable, were confined to single lesions, or to the morbid structure of some particular part of the human body. Dr. Bailie is the only one who presented the profession with an extended view of anatomical lesions. The investigations of Laennec, though sufficient to wrest his name from the ruins of time, were entirely confined to the chest. Indeed he has left but little to be accomplished by any of his successors in relation to the diseases of the thoracic vicera. Louis, it is true, has done much, in his late researches in phthisis, to exhibit the true nature of this destructive malady, but still he has only completed and decorated the edifice, which may almost be said to have been planned and reared by Bailie and Laennec. Our author, Andral, has not stood aloof from the unfortunate consumptive. He, too, has thrown much light upon the tubercular formation, and proved to the profession at large, the fallacy of the exclusive solidism of Broussais.

But he has not only enriched and extended the works of his predecessors; he has also added much to pathological anatomy from his own observation; the whole of which he has arranged into a beautiful and philosophical system. In fact he has done for pathological, what Bichat did, a few years before, for general anatomy.

It is not our intention to present the reader at this late period, with an extended review of the work of Andral. To do this would require more time than we are able to bestow on the subject. Indeed the entire work should be in the hands of every physician, who should study it with as much attention as the most ardent Christian does his Bible. We shall only direct the attention of our readers to that portion of the

chapter, on the lesions of nutrition, which treats of the congenital malformations usually termed monstrosities.

Until recently, this subject has been involved in much obscurity. The older writers applied the term monstrosity only to the most hideous congenital aberration. It is to the industry and perseverance of later anatomists that we are indebted for a philosophical view of the subject. Even as late as the past century, some of the European Journals abounded with the most fanciful drawings, and vague descriptions of monsters varying in form and size, but always resembling, to some extent, certain animals which had alarmed the mother during her pregnancy. These imaginary beings, however, not only resembled the form of certain animals, but they also frequently combined all that was uncouth and terrific in any number of animals whatever. It is well known that many, even at the present day, attribute much, in the growth of the fœtus, to the imagination of the mother. This idea is not confined entirely to the vulgar. Some of the physicians of the present day, especially among the Germans, seem still to adhere to this ancient popular notion. Something for which the mother has longed without being able to obtain, or the sudden approach of some frightful aminal or other object of terror, may either mark or vary the form of the unborn child. This impression was extensively prevalent in the early part of the eighteenth century, although Littre, at a much earlier period, advanced the idea that certain kinds of monstrosities consisted in an arrest or suspension of nutrition at various periods of utero-gestation. This assertion, however, seems to have been entirely overlooked by medical writers, until the time of M. Geoffrey, St. Hillaire, who, together with his cotemporaries, seized upon it, and developed and extended it, until they erected on the ruins of the former absurd hypotheses, a most beautiful and philosophical system. But an arrest or suspension of nutrition, will not always explain the growth of certain monsters. In many cases the formative process, not only seems to be increased, diminished, or arrested, but it is also perverted, or *sent estray*. The organs or tissues are frequently

transposed, or placed in situations more or less distant from the places they usually occupy. Still nature seems to keep within certain bounds, for although she sometimes places the lungs in the abdomen, or the liver in the thorax, the brain has never been found in the pelvis, nor the bladder or uterus in the cranium. But let our author speak for himself in relation to such lesions. On page 72 he observes:

"The development of the fœtus may be modified in various ways: sometimes the formative process, or nisus formativus, as it has been termed, possesses less energy than natural, and the development of the organs is in consequence suspended; in which case they are found either imperfectly formed, or altogether deficient: sometimes, on the other hand, this force seems to acquire an access of energy, and then, there is a corresponding excess of development, and the organs exceed their natural limits either in size, or number. In other cases again the development cannot be properly said to be either excessive or defective; but the formative process appears to have been simply perverted, thus producing various modifications in the direction, and situation of the organs. We have examples of this in the general transposition of the viscera, and in certain varieties in the origin of the principle arteries."

He frequently refers, in various parts of his work, to this perversion of nutrition, in order to explain many facts in pathology, hitherto but little understood. The melanotic changes, together with the osseous and cartilaginous transformations, are of this class.

Meckel, in his remarks on monstrosities, is disposed to think that such creations may vary in form, from the slightest departure from the usual shape, to the most unnatural appearance, and that all the intermediate grades may be the results of a collection of deformed parts from other species, so that a distinct kingdom of monsters might be given to the profession. St. Hillaire, however, was inclined to believe that every monster constituted in itself a kind of new creation or distinct species of animal. The remarks already quoted, will show that our author does not think with either of these able physiologists. He correctly views every monster as a part of the same genus and species with its parents; the alteration in form being only the result of a vice of nutrition.

It has been said by many physiologists, that man, in his passage from the embryotic state to maturity, exhibits at some

period or other, the form of most, if not all, of the inferior animals. If this be the case, the position of our author will readily explain, as he contends, the resemblance of many monsters to the lower orders of animals; while it will, at the same time, show the reason why the simple organization of the latter, can never reach the complicated structure of the former. Indeed it seems to us that man is only a collection, at various periods, of some portion of all that is below him in the scale of life, with the addition of mind and reason, which stamp him with the image of his CREATOR, and render him lord of the earth he inhabits. If this be the case any arrest of nutrition, in the superadded parts of the body, will leave him, to some extent, with the form of the animal, whose organization he most resembled when the lesion occurred. For example, in the language of our author, "the human brain arrested in its evolution, may present an appearance more or less analogous to the brain of fishes or reptiles, but the simple brain of these animals, can never attain the degree of complicated structure which the human brain presents."

A late writer, M. St. Hillaire, affirms that there is, in the animal economy, a kind of law of compensation, by which the excessive growth of one part is always accomplished at the expense of another. Thus, if either a hand or a foot is furnished with an additional finger, or toe, the opposite extremity will exhibit a corresponding deficiency. Our author has collected a number of cases which serve to illustrate and confirm the position of St. Hillaire, but such a law cannot be of universal application. We once knew a whole family who had additional fingers or toes on one or all of the extremities, and yet no one of them was defective in any part of the body. Meckel has carried this law of compensation still farther; for he affirms that the excess of growth in one child, is followed by a corresponding deficiency in those who follow it. This seems to us to be carrying the idea beyond all bounds. In the family above alluded to, there was almost always, an excess of nutrition with a multiplication of parts in every member of the family, while there was no defect in any.

Our author observes, that the organs supplied by the cerebro-spinal system of nerves, seldom present us with faults of conformation, while an irregular development is frequently the result of the agency of the great Sympathetic. The heart and lungs, for instance, are seldom increased or diminished in structure or number, while the urinary, genital, and vascular systems, often present us with irregularities of structure. Indeed, it is more than probable, that an excess or defect in the number of organs, is frequently if not always, the offspring of the distribution of arteries and nerves in the embryo, for wherever healthy blood is sent, accompanied with the necessary nervous stimulus, nutrition must be accomplished.

According to all that our author has been able to collect, female monsters are much more numerous than those of the male sex. This he accounts for in the following terms: p. 76.

"The excessive proportion of female monsters seems to depend on the circumstance, that during the earlier period of the evolution of the fœtus, as in the lowest classes of the animal kingdom, there is only one sex, namely, the female; so that in fact, when we say that the greater number of monsters are of the female sex, we only state in other terms, that in the greater proportion of monstrous formations, be their seat and nature what they may, the genital organs are arrested at an early period of their development."

He next proceeds to notice, the hereditary disposition there often seems to be to form monstrosities. This question we think is placed beyond a doubt. We can readily cite a case in point. A Mrs. —— the mother of a large family in West Virginia, had four fingers and two thumbs on one of her hands. The additional member appeared to be united to the hand only by the integuments, and hence it was incapable of any voluntary motion whatever. The daughter had two thumbs on each hand, both of which were furnished with muscles and placed, to some extent, under the control of the will. Some if not all of her sons, had a supernumerary toe on one or both of their feet, with the usual number of fingers on their hands. The children of the daughter, I have lately been informed, have generally six fingers, with occasionally an additional toe. In this case the aberration of structure

was not only hereditary, but nature made the attempt to complete her work, by furnishing her new creation with muscles, nerves, etc. Meckel, Morand and, others, relate similar instances of hereditary aberration.

Our author next proceeds to the consideration of the three classes of monsters, and first of those which proceed from an imperfection of development. p. 78.

"This kind of monstrous formation does not occur with equal frequency in all the different organs. It may be laid down as a general law, that those organs are most subject to imperfect development, which are the latest in attaining their complete evolution; and that every imperfection of development an organ presents, corresponds exactly with the state of that organ in some of the stages of its development."

He next adduces a number of cases to illustrate the position he assumes in the above paragraph, all of which are conclusive and to the point. He says the intestinal tube is the first formed. It commences with the vesicula umbilicalis, and is gradually elongated into the great and small intestine. This portion has never been found wanting even in the most deformed fœtus. The same is the case with [the urinary aparatus, as well the vascular and nervous systems.

The nerves, it seems, are formed before the spinal marrow, and the spinal marrow before the brain, so that one or both of these organs may be left out of the system, by an arrest of nutrition. The same is true of the heart, for even this instrument is not formed until a part of the arterial system is perfected. In relation to the growth of the body our author remarks. p. 81.

"If we direct our attention to the external surface of the body, and the principal regions of which it is composed, we shall find that those parts which are most frequently absent or imperfect, are precisely the same as are latest in attaining their natural development. For example, at the first period of its formation, the fœtus may almost be said to consist entirely of an abdomen; accordingly, this part, more or less completely formed, has never been altogether deficient in any monster: on the contrary, there are several cases on record, in which no trace could be discovered of either head, neck, thorax, or extremities: so that in fact nothing was to be seen but an abdomen, just as at the commencement of embryotic life. The external parts of generation do not appear until very late; and it is by no means uncom-

mon, in the fœtus, arrived at its full term, to find these parts altogether deficient, or presenting some imperfection which constitutes their natural condition at an early period of their formation. The monstrous formations of the organs of sense are likewise subject to the same law. The eye which makes its appearance in the form of a black point, before any vistige of the external ear is perceptible, is not so often deficient as the ear. The eyelids, likewise, which are not developed until long after the ball of the eye, are more frequently absent or imperfect than the eye itself."

Our author next attempts to prove that many of the organs are independent of each other, or nearly so, during the early periods of their growth, and hence he infers that the nerves accomplish but little in the early stages of fœtal life. In this case we think he is rather too much inclined to generalize, for he afterwards acknowledges that notwithstanding the body may be developed without the brain, still if the cervical enlargement of the spinal cord does not exist, the upper extremities are constantly deficient. From this fact alone we must infer that the nervous influence controls, to some extent, the nutrition of many, if not all the organs.

He next proceeds to examine the connexion between the growth of the arteries and other parts of the body. Here he seems to think that the development of the organs does not depend upon the development of the arteries. St. Hillaire, however, advances a different position. The magnitude of the arteries is always in proportion to the size of the organs. Still it is difficult to distinguish, in the connexion of the various phenomena, the cause from the effect.

The accidental openings, or foramina, are next investigated by our able author. They are always situated near the median line of the body, and are consequently the result of a suspended nutrition. This is especially the case in the fissures found in the anterior portions of the thorax or abdomen. The spinal deficiency, usually termed spina bifida, may also be said to depend on the same cause. The hair lip, in all its forms, or even the entire absence of the lips, likewise invariably depend upon a suspended nutrition. It has been said by some that if the hair lip was the result of this cause the fissure would always be in the centre, which is not the fact.

This objection, however plausible at first view, is readily obviated, when we recollect that the upper lip is invariably formed, in the early periods of fœtal life, in four pieces. The lower lip is formed in two pieces, but they are always united at a very early period, hence a fissure here, is seldom found.

The genital organs may be extensively changed in their appearance, and the sex rendered extremely doubtful by an arrest of nutrition. It may be more or less extensive from the simple opening of the urethra of the male, immediately under the glans penis, to the entire division of the scrotum with the absence of the testicles. p. 91.

"The penis being small and imperforate, may easily be mistaken for a clitoris; the division of the urethra may resemble the aperture of the vulva, especially when the scrotum is divided; while each division of the scrotum, whether it contains a testicle or not, represents with tolerable accuracy an external labium; and in some cases, the division of the penis forms two folds, which descend to the perineum, and may be mistaken for the nymphæ. In all these cases, the resemblance to the female organs is much more striking when the testicles remain in the abdomen. It is a very remarkable circumstance, that in a great proportion of those cases in which the original division of the male organs of generation continues to a greater or less extent, we likewise find other characteristics of the female sex, in these organs, as well as in the constitution and temperament of the individual."

We have already stated that if the growth of the fœtal organs were arrested at different periods, the monster would resemble various animals, according to the situation of the defective organ or tissue. If the heart, for instance, is wanting, the deformity resembles the natural state of the circulation in the dorsal insects,—if it is composed of only two cavities, it resembles the same organ in fishes and some of the molusca. The same may be said of other organs. It must be confessed, however, that we occasionally have deformities resembling in no respect any of the inferior animals. The cyclops is of this class. Here both eyes seem to have terminated in one, in consequence of the absence of the nasal bones, which is undoubtedly the result of an arrest of nutrition. In many instances the central eye has really been found, upon dissection, to be a double organ, situated in a single socket.

Our author next proceeds to the investigation of the second grand division of monstrosities,—that which is the result of an excess of nutrition. p. 104.

"Increase of size, when affecting the whole body, produces those monsters called giants: when confined to some particular organ, it is as often adventitious as congenital; in the latter case we have already seen that it frequently co-exists with atrophy of some other organ. The numerical increase of parts may be limited to a few organs, or may extend to every organ in the body; the parts affected are in general only doubled, hence, Meckel proposes to term this species of malformation, *duplication* of organs. In several cases of this kind, the duplication is so complete that it is highly probably, it proceeds from the junction or incorporation of two fœtuses."

The bones and muscles are more frequently increased in number than any other parts of the body. Such numerical variations however, can hardly be said to constitute a monstrosity. The vertebræ and ribs may be more numerous than common without any inconvenience whatever. If a supernumerary vertebra be only partly formed, then the lesion is of a serious character, but if it be complete the spinal chain is perfect, notwithstanding it consists of an unusual number of links. In the early part of this notice we referred to additional fingers, toes, etc. We shall say nothing further at present on this subject.

The external parts of the body are much more frequently increased, in number, than the internal. The existence of two tongues is occasionally found, but very seldom a double œsophagus or trachea. One of the Edinburgh Journals mentions a case of double duodenum, which terminated in a common pyloric orifice and there formed a kind of cul-de-sac. The writer of this review, once saw a full grown squirrel, which had two hearts, each distinctly formed, and entirely separate from the other. It was killed near Olivesburg, Richland county, Ohio, where the duplicate specimen was examined by several individuals. We do not know, that there is a similar case on record. Winslow relates a case of two hearts in a single thorax, but his specimen, besides being a cyclop, was otherwise imperfect. The trachea and œsophagus were

wanting, thus presenting a specimen of the law of compensation mentioned by St. Hillaire.

Occasionally some of the organs of different sexes are found in the same individual. The Germans have collected a number of specimens of this kind, principally, if not entirely, confined to the genital organs. In no instance, however, have the entire organs of both sexes, been found, complete, in the same individual. In all cases the transformation exhibited nothing but fragments of the different organs. Indeed it is more than probable that the imagination has frequently had much to do, in rendering the duplication of the observer complete even thus far.

Monsters may sometimes be the result of the union of two fœtuses. The connexion may be more or less perfect, from the mere blending of a portion of the external integument, as in the case of the Siamese twins, to the duplication of many of the most important organs in a single skin. Sometimes the fragments of one fœtus, are really contained within the body of an other. A case of this kind undoubtedly occurred, a few years since, in the interior of Kentucky. A gentleman's male servant, after many years of ill health, discharged, per anus, at the age of sixteen, a number of bones, which presented all the appearances of those of a fœtus. Various specimens were sent to Dr. Drake, of this city, which we examined, and found among them a part of an os femoris, which, though very small, was tolerably perfect. After the osseous evacuations ceased, the boy enjoyed good health. This case was first ralated to us by our friend Dr. E. S. Clarkson, and since confirmed by Mr. Rannells, now a student of medicine in the Cincinnati College. Here the fœtus was undoubtedly formed within the boy, at the same time that his body was organized, but where it could have remained for sixteen years, cannot be ascertained. It was no doubt enveloped in a cyst, which eventually opened into either the colon or rectum. M. Dupuytren relates a similar case, and almost the only authentic one on record, where a cyst was found in the colon of a boy thirteen years of age, contain-

ing all the rudiments of a fœtus. In this case, however, the boy died, while in the one just related he lived and became healthy.

Occasionally a monstrosity presents itself to us with a double body and a single head, a double head and a single body, or a double head and body. All these preternatural growths appear to be the result of the union of two fœtuses during the early periods of utero-gestation. The ova, by some unknown means, have been placed in contact, and the vessels from each have shot into the other, and a deformity has been the result. In this case we must beg leave to differ in opinion from our able author, who thinks that this is altogether the result of an excess of nutrition. We think that this lesion should be charged to a defect in the nutritive process, for there certainly were two ova, and had the growth been perfect, duplicates would have been the result. The membranes peculiar to each fœtus, however, were wanting, the ova were placed in contact, and a blending of particles with a corresponding deformity was the consequence. When a monster is found with two heads or two bodies, the single body or head generally contains double organs. There are two stomachs and two alimentary canals, or two brains with or without a corresponding number of spinal marrows, and so of the other organs. Our author observes in relation to double monsters, p. 114,

"The last variety we shall enumerate, is that in which all the grand cavities are separate, at least externally; where, in short, there are two heads and two bodies. In this variety, the extremities occasionally present some anomalies; for instance, one of the lower extremities has been observed in merely a rudimentary state, attached as an appendix to the thigh of its fellow, which was well formed: while the leg belonging to this latter had seven toes on its foot.

"The junction of the fœtuses may take place at any point of the body; and, accordingly, they have been attached to each other; 1st, by the crown of the head, in the same right line; 2d, by the anterior portion of the thorax; 3d, by the anterior portion of the abdomen; 4th, by the dorsal spine; 5th, by the sacrum: 6th, by the nates, etc."

The last grand division of monstrosities to which our author directs our attention, is that which arises from a perversion of the *nisus formativus*, or nutritive force. This may

produce monsters having neither an excessive nor imperfect development, but simply a transposition or misplacement of one or more of the several organs. Our author observes, p. 117.

"One of the most striking examples of this class is exhibited in the general transportation of the thoracic viscera; in which all those parts usually situated at the right side are found at the left, and *vice versa*. The heart affords a remarkable illustration of this transposition; its apex, instead of pointing towards the left, corresponds to the interval between the fifth and sixth ribs of the right side: its auricles and ventricles occupy a position exactly the reverse of their ordinary situation; and the aorta descends along the right side of the vertebral column. The left lung is divided into three lobes, whilst the right has only two. The pyloric orifice of the stomach is turned towards the left hypochondrium, which is occupied by the liver, the spleen being at the right side. The whole intestinal tube presents a similar transposition; thus the cœcum rests on the left iliac fossa, etc."

The primary cause of all these lesions is involved in entire obscurity. It may, perhaps, be some fault either of the ovum, or of its investing membranes. M. St. Hillaire is of the opinion that they are the result of unnatural adhesions, between the membranes and the fœtus, while it is in an embryotic state, and before many of the principal organs are formed. This may be the case in some instances, but it will not account for many of the most important alterations. Mechanical causes may occasionally derange the growth of the fœtus in utero. St. Hillaire found that he was enabled to arrest, and even alter the nutrition of the chick, at any period, by varnishing the shell in different places, or by shaking the egg at different times.

From all that has been advanced on the subject, it is more than probable that a large majority of monstrosities may be referred to vices of nutrition, rather than to diseases affecting the fœtus at any period. Indeed we cannot perceive how the number of the organs can be otherwise increased. Disease, either of the mother or the child, certainly could not form an additional number of fingers or toes; yet it is but a short time since this agent was supposed, even by the best writers, to produce every variation either in the number, or

size, or place of the organs or tissues. Such a position, however, is so completely absurd, that it is only astonishing to us that it was not long since completely abandoned.

The absurd notions of the agency of the imagination of the mother, in the production of monstrosities, do not deserve a formal refutation.

It is probable, from the experiments of a distinguished naturalist, of Geneva, that the amount of nutriment, furnished the fœtus, exerts considerable influence over its development. The individual referred to, found that he could produce either males, or females, in bees, at pleasure, by simply placing the insect, at a very early period, in a cell containing more or less honey. W. W.

Art. VII.—Materia Medica.

Elements of Materia Medica and Theraputics, by Anthony Todd Thompson, M. D.; Professor of Mat. Med. and Therapeut. and of Medical Jurisprudence in the University of London, etc. etc. Second Ed. pp. 1073.

(From a Correspondent.—Concluded.)

We propose to continue our analysis of this valuable work. We regret that the author has augmented the size of the book by the accumulation of much irrelevant matter,—thus we have ten entire pages devoted to the operation of climate upon the system, and a speculative consideration of the varieties observable in the race.

But as we have said, our purpose is not to criticise, but to give an analysis of the work.

Section V.

Narcotics, Syn. Anodynes, Hypnotics.

"Some of the distinctions between this class of medicines and sedatives, have already been pointed out; but there are others that require to be noticed. *Narcotics*, strictly so called, operate as diffusible excitants, and this so decidedly, that by regulating the doses and the repetition of them, the

sleep, which generally follows their administration, may be altogether prevented, and the exciting influence of the medicine only obtained: now, the effect of a direct sedative is an immediate depression of the powers of the system, without any apparent previous excitement. The symptoms of collapse which follow those of excitement, after the administration of a narcotic, are the consequence of the excitement; and, although this does not occur in the direct ratio of the degree of the excitement, yet, if it be considerable and quickly raised to its acme, the state of collapse which succeeds is proportionate; this is not the case with sedatives. The depression which they cause is the result of a peculiar action upon the nervous energy, that at once depresses it, and if the dose be large, destroys both *mobility* and *sensibility*. In a few words, a *sedative* immediately depresses the vital energies: a *narcotic* augments these energies; and this is followed by depression." p. 371.

The author, regarding narcotics in this point of view, defines them to be "medicines which in moderate doses, produce a temporary excitement, succeeded by a depression of the system, generally followed by sleep." All the narcotics do not exert an anodyne power at all correspondent to their soporific;—the influence exercised by some of them in inducing sleep, being disproportionately greater than that of alleviating pain.

In what manner is their influence exerted upon the organs of the body?

1. They act in a special manner upon the nerves of the stomach, and thence communicated to the nervous centres. The digestive powers of the stomach are lowered almost to a state of inaction by the secondary results of narcotism. The primary effect—the direct mode of action—of a narcotic upon the stomach it is impossible to conjecture. The introduction of opium into the rectum, and even its application to the skin, as well as its action on the stomach, suspends the process of chymification, should it be going on. On the intestines the impression of narcotics is to diminish their ordi-

nary contractility, and produce constipation. Their action on the alimentary canal is modified by disease. When the mucous membrane is suffering from subacute inflammation, or is in a highly irritable state, narcotics produce thirst and dryness of the tongue, and vomiting often occurs. In irritable states of the stomach, opium, combined with tonics, aids their influence in promoting the appetite and favoring the digestive function. In ulcerations and open cancer of the mucous membrane, they allay pain and procure momentary comfort to the sufferer. In peritoneal inflammation they cause anxiety, general uneasiness, and vomiting.

2. Narcotics act upon the circulating and respiratory organs. The pulse, says our author, shortly after taking any narcotics, is in some instances small and feeble; in others full and soft; but always more or less irregular. The capillary system is particularly affected by their agency: passive perspiration, itching of the skin, and dilation of all the erectile tissues follow their use. The temperature of the body is also lowered, owing to the diminished action of the capillaries. We cannot agree with Dr. Thompson that the perspiration induced by any narcotic,—Dover's powder, for example,—is passive in its character,—that is, dependent on relaxation of the vessels; the remedy acts by a positive stimulation imparted to the secretory function of the skin. Did narcotics act by inducing passive perspiration, they would be most admissible in cases of eutonic, or exalted action. The respirations and inspirations are lessened in number, and performed in a slower manner whilst the system is under the influence of narcotism.

3. They act on the secerning system by arresting the secretions of the gastric, hepatic, and renal functions, and excite that of the dermoid tissue.

4. They exert their chief operation on the nervous system. The author involves himself in a very obvious inconsistency, in first admitting that narcotics act on the gastric nerves when taken into the stomach, and yet operate subsequently by absorption. When injected into the veins, "yet, even in

this case, says he, their influence is propagated chiefly by nervous communication,—a fact demonstrated by the experiments of Messrs. Morgan and Addison, who discovered that they produce on the inner coats of the blood vessels a peculiar impression, which is conveyed to the brain along the nerves. This is also demonstrated by the rapid effects on every part of the system, often in a space of time too short for these effects to be referred to absorption; besides, it is made known that, when the dose has been so large as to be quickly followed by fatal effects, the whole quantity of the narcotic administered has been found in the stomach." p. 374.

5. Circumstances which modify the action of narcotics. These are quantity, habit, climate, and idiosyncrasy. The poisonous effects arising from an over dose of a norcotic are familiar to our readers.

Narcotics are direct, and indirect. The direct narcotics are,

*Organic Products.

a. Morphia,—combined with meconic acid, in opium:—extract of poppies:
——— with sulphuric acid, in sulphate of morphia:
——— with muriatic acid, in muriate of morphia:
——— with acetic acid, in acetate of morphia:
Bateley's sedative solution?
Black drop?
——— with citric acid, in citrate of morphia.
b. Atropha,—in the leaves of Atropa *Belladonna*.
c. Aconita,—in the leaves of Aconitum *Storchii*.
d. Conia,—in the leaves of Conium *Maculatum*.
e. Datura,—in the herbacsous part of Datura *Stramonium*.
f. Digitalia,—in the leaves of Digitalis *Purpurea*.
g. Hyosciamia,—in the leaves of Hyosciamus *Niger*.
h. Lupulia,—in the strobules of Humulus *Lupulus*.
j. Camphor,—obtained from Laurus *Camphora*.
k. Unknown principle,—contained in Rhododendron *Crysanthum;* Lactuca *Sativa*, et *Virosa;* Arnica *Montana;* Rhus Toxicondendron.

**Inorganic Products.

l. Ether,—*free* and *combined*.

Indirect Narcotics.

m. Tinctures of narcotics.
n. Veratria,—contained in Colchicum *Autumnale*.

Mental Narcotics.

Music; gentle friction.

Such is our author's table of this valuable class of medicinal agents. His division of narcotics into direct and indirect is grounded on a mere vague notion. Those exciting a direct impression on the nervous system, without necessarily entering the circulation, he designates as direct; those which enter the circulation before acting on the nervous system, are indirect.

Under the head of morphia and its compounds, are many valuable remarks;—more than thirty pages are occupied in the discussion. We shall endeavor to give an outline of the whole, with as little particularity of detail as is compatible with a just, yet succinct, exhibition of some very important truths.

Morphia, morphina, or morphine, is a saline body which exists in the opium in combination chiefly with *meconic acid*, but occasionally, also, with sulphuric acid, in the form of a bimeconate, and a sulphate. It is a chrystallized, white, inodorous, bitter, alkaline body. The author enters upon a rather protracted notice of the several modes of obtaining morphia, which we pass by, without repeating. Morphia combines with sulphuric, muriatic, acetic, and citric acids, and forms soluble salts, all of which are used as thereapeutical agents. The mineral acids in a concentrated state decompose morphia, but diluted with water, they readily enter into combination with it. The dose of these salts is half a grain; they are decomposed by the alkalies, and salts of the metals. The muriate of morphia is the best of these salts, affecting the head little, and scarcely displaying any exciting powers.

Meconic acid is the only base with which morphia has been found naturally united: has a slightly acid taste; is inodorous, and possesses no medicinal properties. The meconate of morphia, prepared by the hand of nature in the living system of the white poppy, the papaver *somniferum*, is the narcotic principle of opium. Opium, besides the meconate of morphia, contains four other principles, *narcotina*, *eodeine*, *narceine*, and *meconine*:—the odor of opium depends on a volatile oil.

All the salts of morphia are decomposed and precipitated by astringent vegetable infusions and decoctions. This liability to decomposition in the salts of morphia by various salts of the metals, alkaline bodies, and vegetable infusions, lessens their therapeutical utility.

The primary action of opium is stimulant, and its agency is on the nervous system. The action of opium on the system is modified by age, sex, temperament, custom, combination, and climate. Children and women are more readily affected by the drug than adults of the other sex. The *sanguine* temperament is more easily acted on by opium than the melancholic. Custom has great power in modifying its agency. Dr. Russell, in his history of Aleppo, describes a Turk, an opium-eater in Smyrna, who took daily three drachms. The discontinuance of the habit is very difficult. The habitual use of this narcotic engenders a train of melancholy symptoms; after the excitement, subsequent to its introduction into the stomach is over, a wretched state of ennui, horror, and depression follows. When pain is present, immense quantities of the drug can be taken, without the same injurious effects which flow from its employment in health. "Dr. Chapman mentions an instance in which a wine glass-ful of laudanum was taken several times in twenty-four hours, for many months in succession, to alleviate pain in passing biliary calculi; and yet, after the patient was finally recovered, no bad effects whatever were perceptible on any of the functions. He also states that Dr. Monges and Dr. La Roche of Philadelphia had given it, in a case of cancer of the uterus, to the extent of three pints of laudanum, besides a considerable portion of solid opium, in twenty-four hours, without any effect except that of relieving pain. It is not easy to account for this effect of opium on the diseased habit; but the fact is indisputable, and it instructs how far we may proceed in administering it in cases of disease." p. 401.

Combination greatly modifies the operation of opium on the animal economy. Combined with antimonials, its diaploretic powers are greatly increased; and it is rendered less

likely to impede the other secretions. "With acids, half the usual dose will produce the effect of a full dose—a result depending on the production of a soluble salt." We entertain some doubts on the correctness of the last statement—whether opium be given with acids or alone, its action is about the same as regards its narcotic influence. Climate exerts a slight modifying power on the agency of opium. This results from the influence of climate on the vital properties—sensibility and irritability. A warm climate exalting, and a cold climate depressing, the susceptibility of the vital energies to be acted on by remedial articles.

There obtain some differences between the operation of the salts of morphia and opium. The acetate of morphia does not produce that violent propulsion of blood into the capillaries of the system, nor does it induce heat of skin, nor elevation of pulse, as is the case subsequent to the taking of opium. Opium is therefore to be preferred where we wish to stimulate the action of the heart, as occurs in depressed conditions of the vital powers. The citrate, the muriate, and the sulphate of morphia act in a manner similar to the acetate—the muriate affecting, however, the encephalon less than any of the others, its stimulant influence is obscure; its sedative very obvious. *Narcotina*, the second active constituent of opium, not being soluble in the animal juices, possesses little or no activity on the animal body.

Dr. Thompson enters upon a very minute enumeration of the various kinds and preparations of opium—these may be found in any of our late Dispensatories, we therefore pass them by, without further comment.

With reference to the remedial employment of opium, we must never lose sight of both its stimulant and sedative influence. In all inflammatory affections, the free detraction of blood must precede its use, where we wish to have the interference of its sedative or hypnotic power. A state of nervous irritation, often consequent upon febrile excitation and liberal depletion, is best relieved by a judicious exhibition of opium, in the form of a spirituous or vinous tincture; where

opium, in its entire state, inflicts great distress on the patient, either in the solid or fluid form, the salts of morphia, especially the *muriate* or *acetate*, may be given. Our author regards opium as the sheet anchor of cure in rheumatism, and looks on blood-letting as only prefatory to the use of opium. Doubtless the lancet may be pushed too far in even acute attacks of rheumatic inflammation; but, as far as our experience goes, opium is not a safe remedy in this disease. Liberal purging, with tart. emetic and colchicum, promise far more in rheumatism than opium.

In confirmed phthisis pulmonalis, our author has found a mixture, consisting of one-fourth of a grain of muriate of morphia, one fluid drachm of distilled vinegar, and ten fluid drachms of the decoction of lichen Islandicus, very serviceable in allaying cough and promoting sleep, without increasing the disposition to sweating. Opium is employed in a great variety of morbid states of the system to allay irritation, subdue pain, produce sleep, and equalize the circulating mass.

"b. Atropia.—This is one of those alkaloids which the industry of our Continential brethren, in the field of science, has brought to light. Atropia, combined with the malic acid, and other constituents of the plant, is formed by the hand of Nature in the leaves, and more particularly in the seeds of the Atropa *Belladonna*. All the parts of the plant are narcotic." Perhaps, Belladonna has more claim to the title of anodyne than any other of the narcotics. The local application of the extract has been found beneficial in neuralgia.

Dr. Golles, in Hufeland's Journal, of 1825, recommends the root as a remedy in hooping cough. "I have ordered" says Dr. Thompson, "the extract in doses of one-eighth of a grain to a child of eight years of age, and gradually increased the dose to a quarter of a grain. Its power over the cough is extraordinary. It produces a state of the skin closely resembling scarlatina, accompanied with fever, suffused eye, dimness of sight, and frequently, although not always, headache. Whilst these symptoms continue, the cough remains

absent; but it returns as soon as they disappear. By keeping the habit for a sufficent time, under the influence of the remedy, the period of the disease has always been greatly shortened." p. 422.

Belladonna was suggested by Habneman as a preventive of hooping cough. His directions are to dissolve three grains of the extract in f3s. of cinnamon water, and to administer three drops of this solution twice a day to a child a year old; adding one drop for every year, until twelve be taken for a dose.

Dr. Lermann, of Torgau, has stated that, in a fatal epidemic, which occurred in that place in 1825, he tried the preventive powers of Belladonna without benefit. The extract of Belladonna exerts a dilating effect upon the pupil, by acting on the radiating fibres of the iris, when applied to the eyelids. An ointment, formed with 3s. of the extract, and 3vij. of lard, affords great relief in hemorrhoids, and in chordee when rubbed on the perineum: and the pounded leaves when sprinkled upon open, cancerous sores, abate pain.

c. Aconita is the narcotic principle of all the genus Aconitum. In every form of preparation, the aconite or wolf's bane, is a medicine of extreme virulence, and demands the utmost caution in its administration.

d. Conia is the narcotic principle of the conium, *maculatum*, or hemlock. This plant is a narcotic of considerable power, and may be usefully employed in all diseases connected with great irritability. In chronic rheumatism, especially in sciatica, it exerts a very beneficent effect. The dose of the powdered leaves is from gr. iij. to gr. x, that of the conia is from one-fourth to one-half grain; and that of the tincture, from m x to m xxx, in any vehicle, except one of an acid nature, which destroys its narcotic power. The extract is generally employed, but it is very liable to deterioration, and should never be used whenever a saline efflorescence appears on the surface, as it is then of no value. The dose of the extract is from gr. i, to vj. grains, but may be gradually raised to half a drachm; and when carried to this length, it should be continued for some weeks. Much comfort has also been procured by applying

the extract as a topical dressing to irritable sores, whether cancerous, or otherwise.

e. Duturia. This is an alkaloid; the active principle of the datura *stramonium*, and is found in combination with malic acid in the seeds of the plant. One of the species of the datura has always been smoked in Ceylon to relieve asthma; the poorer Turks use it instead of opium; and the Chinese infuse it in beer to produce ebriety. The Arabians were early acquainted with its norcotic powers, and employed it both as a poison and as a medicine. The influence on the system of the datura *stramonium*, or Jamestown weed, closely resembles that exerted by belladonna. The plant is given in the form of extract and of tincture. The dose of the extract, if well prepared, should not exceed half a grain at first, but may be gradually carried to six grains. In small doses, it is very useful in uterine irritation, and in cases of painful menstruation, combined with Plummer's pill and Foxglove. The tincture is made by digesting for six days, and then filtering, ʒij. of the bruised seeds in fʒxvj. of alcohol. The dose is from m x to m xx. As a topical application, this tincture has been found very efficacious in neuralgia.

f. Digitalia. This saline substance is conjectured to be the active principle of the leaves of the Foxglove;—probably it is a compound substance. The determination of this point is of little moment, as the digitalis is potent enough without the isolation of its active principle. Digitalis acts upon the nervous system, producing first stimulant, and afterwards sedative effects.

This remedy should not be given where the inflammatory diathesis is present. In phthisis, it is fitted for the advanced stages of the disease, provided the inflammatory pulse has been previously reduced. M. Neuman, of Berlin, has found it an admirable remedy in chronic catarrh, when this depends on a state of erethism of the mucous membrane of the bronchi. He infuses ʒij. of the dried leaves, fʒvj. of boiling water, and gives one spoonful of this infusion every hour, until nausea, or a sense of constriction of the throat, or

irregularity of the pulse follow. The medicine is then withdrawn, and again employed, in a similar manner, should the disease persist. Experience has confirmed the efficacy of Foxglove in hypertrophy of the left venticle of the heart, with or without dilation of its cavity: it diminishes the action of the diseased organ, and with this, the vertigo, pulsation in the head, singing in the ears, and other sympathetic affections of the encephalon, attendant upon this condition of that organ. The leaves of digitalis, when used, should possess a beautiful green color and odour of the fresh plant; they should be kept from the light and air. The dose is a grain of the leaves, that of the tincture, from ten to sixty drops.

g. Hyosciamia. This is an alkaloid, the active principle of henbane, hyosciamus *niger*. The hyosciamus acts in a way analogous to opium. It is regarded as peculiarly adapted to puerperal insanity. It is useful in every case of pain, particularly in neuralgia, affecting the facial nerves. Smoking the leaves in a pipe allays the pain of toothache, and the difficulty of breathing in asthma. Applied to the surface, it diminishes pain, dilates the pupil, and soothes greatly the irritation of scrofulous ulcers and cancerous sores. The tincture is the best form of exhibiting henbane—dose, from fifteen to sixty drops; that of the extract is gr. ii, to gr. xvj; but it has been carried gradually to gr. lx. It should not be prescribed in combination with alkalies, nor with lime water, as these destroy its narcotic power.

h. Lupulia is a peculiar compound principle, spontaneously formed in the strobules of the hop, the humulus *lupulus*. It was first brought into notice by Dr. Ives, of New York. The lupulia is a weak narcotic — its dose is from ten to thirty grains.

Under the heads of the other narcotic substances, we find nothing worth analysis until we reach indirect narcotics.

Tinctures of Narcotics. "There can be no doubt, that the alcohol employed aids the introduction of the narcotic principle into the system, and enables it to be more directly applied to the nervous centres." We are incapable, we

confess, of comprehending the above assertion. The stomach surely is amply endowed with nervous power, to be acted on by narcotic tinctures, without the clumsy hypothesis of the introduction of the tincture into the blood. Where we wish to soothe pain, and to stimulate at the same time, the tincture is the most eligible form of a narcotic—but when we seek for the attainment of the anodyne effect exclusively the extract, or the article in substance, is to be employed.

n. Veratria. This alkaline principle is found in the seeds of the veratrum sabadilla, the roots of veratrum *album*, and in the colchicum *autumnale*. It is a very acrid, stimulating substance.

Colchicum is an efficacious and valuable medicine. It was employed by the ancients under the name of Hermodactyllus; and as such was sold in England, by the druggists in the time of Turner, the herbalist. Alexander Trallianus, a Greek physician, first recommended it in gout. Paulus Ægineta extols it as a *purgative* in pains of the joints; and it was, after this period, very generally employed, until some circumstances again threw it out of use, when it was only occasionally resorted to as a diuretic. The surprising effects of an empirical French remedy, the eau medicinale again brought colchicum into notice, and few medicines are now so generally employed. Colchicum, consequently veratria, exerts a double action on the living system—a local stimulant influence and a narcotic sedative effect; which is probably the result of the prior stimulant action. It operates chiefly on the duodenum; exciting powerfully the excretory ducts of the liver and pancreas, producing copious bilious stools, diminishing febrile action, and allaying pain. It is chiefly from its operation on the bowels, that its beneficial effects in gout and rheumatism result. Colchicum, nevertheless, is generally supposed to exert some specific influence in gout and rheumatism." p. 446.

The wine made of the dried bulb is the best preparation—the dose is from fifteen to sixty drops repeated, every eight hours.

"Mental Narcotics. Our passions, medically considered, are phenomena which produce decided effects on our corporeal frames—frequently causing diseases, sometimes curing them. Those persons who are endowed with great nervous sensibility, are, for the most part, powerfully effected by mental pleasures and pains: and, therefore, when the higher orders of society, and men of intellectual acquirements, are affected by mental diseases, it is sometimes necessary to employ mental Narcotics, if the material fail in procuring repose."

The author remarks thus on the agency of sounds as productive of a subduing effect upon mental excitation: "It is a well known law of the system, that a variation of a stimulant impression renews the excitement in such a manner as to be much less likely to be followed by collapse than when there is a repetition of the same impression. To illustrate this, I need only refer to the effect of listening to the gurgle of the mimic cataract of some mountain rill, or to that of any small waterfall: how decidedly is felt the influence of the sound, disposing to sleep. It is a common observation, that a dull sermon is a good soporific; but I am of opinion, that it is less the dullness of the matter of the sermon, than the monotonous manner in which it is read, which produces this effect. Now, music operates, in the first instance, on this; in the second, by the associations which it engenders. If it be slow and plaintive, the impressions are longer continued, less varied, and therefore, more soporific; and along with use must also take into account the sedative influence of all depressing passions; and the melancholy, which is the effect of plaintive music, is one of these. This power of music is much increased, also, by the period of the day, and the situation in which the listeners are placed. In some peculiar cases of insanity, therefore, where music is advisable as a soporific, the evening is the best period for trying its effects: and this period is chosen, also, for the further reason, that when sleep is induced, there is much less likelihood of its being disturbed, than if it occurred in the day. In the

application of this narcotic, the chief difficulty arises in determining the character of the individuals, the nature of the attack, and the kind of music best fitted for the occasion. In some, it should be such as may withdraw the mind of the patient from old associations, and turn his ideas into an entirely new channel: in others, it will prove most salutary if it recall his mind to former habits, and spread before the imagination the scene of past hours, in which domestic happiness reigned undisturbed in the bosom of the sufferer. Under such circumstances, the cloud which has settled upon the mind may be happily dispersed, and reason restored to her seat.

The effects of gentle and slow friction in producing a narcotic result, are referrible to the principle, the repetition of an agreeable impression on the nervous system. I have witnessed the powerful influence of gentle friction, in producing sleep, in many instances. In cases of pain, in particular, gentle friction produces a considerable soothing effect, by transferring the attention from the seat of pain to the mild and agreeable impression of the friction; and this is still more powerful, if to this impression be joined sound, which, although operating on a distinct sense, yet, by the combination, is powerfully soporific; thus, the patting of an infant on the back, whilst at the same time the nurse hums a monotonous tune, is almost sure to procure sleep. I could adduce many instances of the excellent effect of such narcotics." p. 449.

SECTION VI.

Antispasmodics.—These are such medicines as allay irregular muscular contraction. The chief circumstance distinguishing antispasmodics from narcotics and tonics is, that the former is not followed by insensibility to impressions which results from the use of narcotics, and that they act more quickly than tonics; they are more powerful than narcotics, more rapid than tonics, in repressing inordinate muscular motion. The author indulges in a strain of subtle speculation on the modus agendi of this class of remedies, which we will not notice any further, as such refined views

conduce little to a just practical conception of the curative powers of remedies.

A table of Antispasmodics is given—the principle articles are musk, castor, oil of amber, valerian, assafœtida, galbanum, tonics, narcotics, and the mental antispasmodics, fear, and abstraction.

We find nothing of interest in our author's views of this class of medicines, except his remarks on the Mental Antispasmodics. Speaking of *fear*, he remarks, "I recollect a striking instance of its sanative influence in hooping cough, kept up by the habit. The patient, a young boy, was threatened with the application of a large blister, it was not applied, but merely placed within his view; nevertheless, the dread of it completely removed the cough. Boerhave also cured epilepsy in a whole school, by displaying, at the moment of the expected attack, a red hot poker, which he threatened to poke down the throats of those who should have a fit." The agency of abstraction as an antispasmodic, is thus brought forward. "A man has his shoulder luxated; various ineffectual attempts are made to reduce it, owing to the spasm which has supervened, and which is maintained by the attention of the patient being directed solely to the part; abstract the attention by any means, the spasm instantly yields, and the head of the humurus instantly slips into its socket. It is unnecessary to pursue the subject farther: there is no doubt that both fear and sudden abstraction of attention may be successfully employed as antispasmodics; but, in admitting this, we must, at the same time, confess that great discrimination and judgment are requisite to determine the circumstances under which their employment is applicable." p. 465.

Section VII.

Tonics—Syn. *Corroborants.* These are substances which restore strength to the body when it is weakened. They impart vigor to the muscular system, tone to the digestive apparatus, and increased energy to the circulating powers; they also prompt the capillaries to a better performance of their appropriate action, such as secretion, nutrition,

and absorption, and induce an abatement of morbid nervous susceptibility.

The principal tonics are cinchonia, quinia, piperina, gentiana, quassina, bitter extractive, arsenic, tinc. bismith, iron, mineral acids, cold bathing, exercise, friction; the mental tonics are hope, confidence, travelling, and amusement.

Cinchonia is the active principle in two officinal cincona barks, in which it is united with *kinic acid*, forming a *kinate*. These barks are the cinchona *lancifolia*, and c. *oblongifolia*. Cinchonia, when separated from the kinic acid and combined with the sulphuric, or muriatic, or acetic acids, is very soluble, and eminently displays tonic effects. Cinchonia is obtained, likewise, from the cusparia bark. This is an excellent aromatic tonic in convalescence from fevers, dysentery, and diarrhæ; and whilst it increases appetite, and restores tone, it never oppresses the stomach. The dose of cusparia is from gr. v., to ℈j.

Quinia. This salt is more bitter than cinchonia, and combined with sulphuric acid forms an affective tonic. The officinal cinchonia barks, yielding quinia, are the c. *cordifolia*, and c. *oblongifolia*. Dr. Elliotson gives the sulphate of quinine to the extent of gr. x, in intermittent fever, just before the paroxysm. The best mode of prescribing it is to dissolve two or three grains in an infusion of the confection of roses, filtered, and acidulated with dilute sulphuric acid, and to add ℥i. of tincture of orange peel, which covers the extreme bitterness of the solution. The bitterness of the sulphate is covered by aromatic bitters, such as orange peel, and cascarilla.

Piperina does not deserve to be ranked among the pure tonics—it is rather a stimulant. The dose is from gr. viij., to gr. x, every fourth hour, in the apyrexia of ague.

We find nothing particularly interesting until we come to the author's reflections on arsenic. Speaking of the arsenite of potassa, he remarks, that it "has been given, with benefit, in those cases of chronic rheumatism which assume an intermittent type: it has also proved occasionally useful in symp-

tomatic epilepsy, chorea, and other spasmodic affections, as well as tic douloureux and cephalalgia. I have had much experience of its efficacy in lepra and some other cutaneous diseases, when given in conjunction with large doses of the pure alkalies and with conium." p. 517.

Of the sub-nitrate of bismuth, the author says, "this preparation is a powerful tonic, particularly useful in that state of stomach which produces *pyrosis*. In this complaint, the paroxysms commence with a sense of constriction and pain at the stomach, gradually subsiding after the eructation of a large quantity of either insipid or acidulous watery fluid. The subnitrate, in doses of from griij. to grx., in combination with grj. of opium, gives almost immediate relief, and affords a more decisive evidence of the primary action of tonics on the stomach, than any medicine of this class. It has been erroneously stated to be beneficial in cholera." p. 523.

"With regard to the medicinal powers of the salts of iron, the natural chalybeates are of eminent service in all cases requiring tonics: their primary effect is displayed on the digestive organs; whence their influence is propagated, rousing the nutritive faculty in every part of the body: they augment the power of the secretory system: and, by the moderate but permanent nature of the impression which they impart to the nerves, increase the tone and general vigor of all the functions. Something is undoubtedly due to the circumstances connected with drinking mineral waters at their source:—when the cares and anxieties of life have been left behind, in the smoky alley and crowded street, when hope and confidence and amusement lend their invigorating aid to the tonic influence of the salutary fountain. But tone follows the use of iron in all its forms, and therefore its preparations are employed in every disease connected with relaxation or debility, particularly of a chronic kind: dyspepsia, hysteria, amenorrhœa, leucorrhœa, scrofula, and chronic catarrh, are a few of the catalogue which chalybeates are calculated to benefit." p. 535.

"Sulphuric acid, when properly diluted, is a tonic of very considerable power. In cases of immoderate perspiration—as, for instance, in the hectic of phthisis pulmonalis—it is the appropriate remedy; and in combination with aromatics, it removes many of the urgent symptoms of dyspepsia; and it is altogether a tonic of the highest value when judiciously administered. When given to women who are suckling, it acts powerfully on the system of the infant, causing gripings, and frequently convulsions, although it has never been detected in the milk of the mother."

Of the verity of the last averment respecting its inducing infantile disease, we entertain serious doubts. When any medicine disturbs the regular and healthful operations of the maternal system, the secretion of the lactiferous tubes will partake of the effect of such abnormal action, and the child be sickened by this perverted secretion. Mental emotions in the mother often engender colic, and other affections, in the infant.

Our author, in speaking of nitric acid, says that he has frequently administered it holding in solution the bichloride of mercury, and that he never experienced any bad results from the combination, but that beneficial consequences will arise from this conjunction, in many cases of disease, especially of the surface of the body. Muriatic acid is likewise a good tonic. In malignant ulcerated sore throat, such as is frequently epidemic in London, both internally used and in gargles, combined with tincture of capsicum, and infusion of roses, this acid has been found an efficacious remedy. Cold bathing, exercise, friction, cheerful mental emotions, act as tonics, and are to be employed by the skilful physician with great effectiveness in many cases of morbid action.

Section VIII.

Astringents.—These the author divides into those which exert a tonic influence on the system:—acids, and metallic salts, as allum, sulphate of iron, sulphate of zinc, etc., and astringents which exert a sedative influence such as sugar of lead, and cold. Dr. T. is confident that *Ruspini's Styptic*,

which he views as a very valuable astringent, consists of gallic acid, a small proportion of sulphate of zinc and of opium, dissolved in a mixture of alcohol and rose water.

The chapters on errhines, expectorants, and sialagogues, contain little or no matter of interest. Emetics and cathartics are well disposed of, and deserve careful perusal. Our notice of the work has extended beyond our original design; we must, therefore, come to a conclusion of this article. Dr. Thompson has omitted entirely the consideration of anthelmintics, although invermination often is productive of disease, and should claim at our hands, as practical physicians, some consideration. J. P. H.

Art. VIII. — Medical Cyclopedia.

The American Cyclopedia of Practical Medicine and Surgery, Part IX. Carey, Lee and Blanchard, Dec. 1835.

We have lately received the 9th part or number of this comprehensive and learned work. It is in a great degree composed of articles from the pen of the erudite and laborious Professor Geddings, of Baltimore, whose cultivation of morbid anatomy bids fair to render him an ornament to the American Profession. His contributions in this number are chiefly on the special anatomy and pathology of the arteries. As usual his articles indicate a variety of research, and may be referred to as authority. As a specimen, we shall select the diagnosis and treatment of inflammation of the arteries.

"*Symptoms and Diagnosis of Arteries.*—The symptoms of acute inflammation of the arteries are so analogous to those common to many other affections, that it is not easy to discover any traits sufficiently constant and characteristic, to distinguish it from diseases of other portions of the organization. The difficulty is greatly augmented by the deep seat of some of the principal vessels, by the complex relations of all of them, and by their peculiar liability to

have their functions thrown into disarray, by almost every disturbance affecting other tissues and organs. We shall first enumerate the principal symptoms that accompany the disease in its different stages and modifications, and afterwards consider how far any of them can be relied on in forming a diagnosis.

Acute inflammation occupying a small extent merely of a single artery, is often unattended with any very striking disturbance of either a local or general character. Thus, after the application of a ligature, which always occasions more or less inflammation of the vessel, there is often no very palpable alteration of the part: there is but little increase of sensibility, heat, or tumefaction, and the whole process of obliteration may be accomplished, without the supervention of any febrile or other constitutional disturbance. It is far different, however, when the inflammation is more extensively diffused, and when it seizes with considerable intensity upon a large extent of the arterial system. Under such circumstances, it is attended with violent fever of the inflammatory kind, the symptoms of which vary much in the progress of the disease. The modifications thus accruing, are partly attributable to the influence exerted upon the vital powers, and in part to changes taking place in the structures of the vessels themselves, and the blood they circulate. The first symptoms manifesting a general disturbance of the system, are commonly slight chills, alternating with flushes of heat, which are speedily followed by intense fever, attended with violent pulsations of the heart and arteries, a red suffusion with capillary injection of the skin, burning heat, unquenchable thirst, extreme restlessness, jactitation and general distress, laborious and hurried respiration, and sometimes a dry harassing cough. When the inflammation is seated in the aorta, there is, according to Joseph Frank, a sense of heat beneath the sternum, or in the vicinity of its upper extremity; and Spangenberg and Kreysig remark, that the patient sometimes complains of a sensation like that of hot iron drawn along the course of the aorta, descending as low as the crural arteries. When the arteries of the extremities are affected, there is pain, sometimes simulating rheumatism, sometimes of a burning kind, in the course of the inflamed vessel, which either fixes itself with considerable intensity upon a particular part, or is unequally diffused. The affected point is tender to the touch, and if the vessel be superficial, there is generally increased volume and hardness of its walls, perceptible through the integuments. There is likewise increased heat, and sometimes more or less tumefaction, with a distressing sense of throbbing. At first the pulsation is preternaturally violent along the whole extent of the inflamed artery, but in proportion as its tunics, and the blood within, become altered, the inordinate throbbing and expansion of the vessel is confined to the portion above the principal seat of the inflammation, while lower down the pulsation becomes feeble, and when obliteration takes place, finally ceases altogether. Should the carotid artery be affected, there will be pain and tenderness along the side of the neck, attended with violent pulsation in that region and in all the arteries of the head,—distressing cephalalgia, vertigo, flashes of light before the eyes or obscuration of vision, ringing or roaring in the ears, and in some cases violent delirium, convulsions, or even apoplexy. In one of Frank's cases, the patient

complained of every thing wearing a green color; and in most instances, whatever artery is affected, the corresponding veins and capillaries are preternaturally turgid in the first stage of the disease, owing to the blood being propelled into them with increased impetuosity.

From the onset of the disease, the heart beats violently, and is affected with frequent palpitations, especially if the inflammation implicates its lining membrane. There are forcible pulsations or throbbings of the whole arterial system, and during the whole of the first stage, the pulse is full, strong, tumultuous, bounding, and sometimes exceedingly frequent. J. P. Frank remarks, that it is in some instances as tense and as hard as a metal wire; and in one of the cases observed by him, its beats fluctuated from 185 to 200 in a minute. It also frequently intermits, or presents a kind of double stroke, and in some instances, if blood be drawn, both the hardness and frequency are increased. The respiration is hurried, embarrassed, and occasionally so difficult as to amount to distressing orthopnœa. There is also a troublesome dry cough, and sometimes hemoptysis; and if the disease be seated in the aorta, any sudden movement of the body occasions an increase of pain, and augments the general suffering. The tongue is red on the edges, its papillæ prominent, and its base and middle coated with a thick fur. The thirst is intense, and unquenchable; the stomach sometimes irritable; the bowels constipated, and the urine high colored, scanty, and voided with a sense of scalding. It is occasionally dark colored, turbid, or even bloody. The face and eyes are suffused and turgid; blood occasionally flows from the nose; the injection of the capillaries occasions a preternatural turgescence of the skin and all the superficial vessels, and the surface sometimes assumes a deep red, purplish, or mottled appearance.

"As the disease advances, the vital powers are gradually exhausted under its ravages; the coats of the inflamed arteries undergo important alterations; the blood sometimes becomes coagulated in the affected vessels; and with a general aggravation of most of the above symptoms, a new train of phenomena is frequently superadded. The general anxiety, restlessness, and distress, now increase. The pulse augments in frequency; becomes small, wiry, weak, irregular, and acquires a peculiar sharp thrill. The dyspnœa is more distressing. The heart is affected with frequent palpitations, and the slightest motion or exertion, or an erect posture, occasions vertigo or a disposition to syncope. The tongue is dry, scabrous, and covered with a brown sordes; the thirst is intense; the skin is covered with clammy sweats; the countenance assumes a sunken, decomposed or cadaverous expression, or it is lurid and œdematous; the bodily powers decline, and the patient is affected with delirium, especially at night, subsultus, tendinum, or frequent convulsive movements of different parts of the body. The bowels, which are at first constipated, now assume an opposite condition, and the dejections are frequent, dark colored, and highly offensive. The urine is also dark, turbid, and fœtid, and the whole of the secretions and excretions are perverted. The skin, which was at first simply injected, now assumes a deeper purplish hue, and if the inflammation occupy one of the principal arteries of the extremities, the condition of the affected parts

undergoes important changes. The alterations of the textures of the vessel, and the formation of fibrinous concretions by the coagulation of the blood within, gradually interrupt the transit of that fluid, and the portion of the member situated below the seat of the disease, has its nutritive functions impaired in a corresponding degree. The preternatural pulsation, which at first was manifest along the whole course of the artery, is now only perceptible above the seat of the disease, while below it is feeble and indistinct. This arises from the gradual obliteration of the vessel, and is attended with a sense of coldness and numbness of the part, resulting from the privation of its nutritive fluid. The obstacle to the course of the blood thus created, occasions a distention of the artery above, with preternatural pulsation; and Naumann remarks, that in one case, it imparted the sensation, to the finger, of a distended membranous sac, having a fluid issuing from its surface by numerous pores. (*Handbuch der Med. Klinik*. II. 606.) Should the obliteration be complete, all pulsation below ceases; the limb becomes œdematous; the blood gradually accumulates in the radicles of the veins, giving rise to a dark ecchymosed appearance, arranged either in isolated points, or more diffused; the part becomes cold and numb; small purplish phlyctenæ make their appearance, and the part finally falls into gangrene, unless the collateral anostomoses should so far escape the disease, as to admit of their furnishing a sufficient supply of the vital fluid to obviate these consequences. With the development of these phenomena, the powers of life become more prostrated; the pulse more frequent, small, sharp, and irregular; the clammy sweats more profuse; the delirium gives place to a profound coma; the evacuations come away involuntarily; hiccup supervenes; the extremities grow cold, and the patient either sinks exhausted, or death is ushered in by convulsions.

"When the disease takes a more favorable course, it is represented by Puchelt, that it sometimes pursues a regular progress until the seventh day, exacerbating twice in the twenty-four hours, and then forms a crisis, either by a free perspiration, hemorrhage, or the deposit of a copious sediment in the urine. (*System der Medicin*. Band II. II. Th. 63.)"

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"*Treatment of acute inflammation of the Arteries.*—Much need not be said on the treatment of acute inflammation of the arteries. It must be varied according to the stage of the disease, its intensity, and the complications with which it is associated. In the active or sthenic forms of the disease, especially when the arterial system is extensively involved, the free abstraction of blood presents itself as the chief remedy, and it must be pushed to an extent commensurate with the exigencies of the case, and the powers of the system to bear it. Blood must be freely abstracted from the arm, and the operation repeated as often as the necessity may recur provided circumstances should not arise to render such copious depletion improper. Local depletion will also be found serviceable, especially when the affected vessel is superficial. Leeches should be freely applied along the course of the inflamed artery, and the bleeding encouraged by fomentations with warm water. Should one application not be sufficient, they must be repeated at proper intervals, until a sufficient

effect is produced. It was remarked by Frank and Spangenberg, that the abstraction of blood rendered the pulse harder and more tense. This has been regarded by some practitioners as a sufficient reason for not resorting to the practice. But when the indications of active inflammation are unequivocal, bleeding is indispensable, and if the disease should be associated with a neuropathic disposition of the vessels, disposing them after venesection to take on this peculiar kind of reaction, when sufficient blood has been detracted, it may be useful, with the view to prevent the bad effects of this nervous erethism, to prescribe an opiate, either alone, or what will be preferable, combined with antimony and calomel, as recommended by Copland. But in resorting to the abstraction of blood, it must be borne in mind, that there are not unfrequently circumstances in the course of this disease, which will render it unsafe to push general bleeding to a great extent. There is frequently much proneness to syncope even after a slight bleeding, and the inflammation of the arteries is besides only developed in many instances, during the last stage of inflammatory and ataxic fevers, small-pox, scarlatina, puerperal fever, etc., when the powers of life are so prostrated, that the withdrawal of even a small quantity of the vital fluid might be productive of fatal consequences. Still, when there is great tenderness in the course of an artery, especially if the artery be superficial, it may be necessary in some instances, even under these circumstances, to apply a few leeches along the course of the vessel—acting upon the same principles that guide us in the treatment of other local inflammations, attended with impairment of the vital powers.

"Simultaneously with the abstraction of blood, the patient should be put upon the use of mild saline cathartics, either alone or alternated with calomel;—nitrate of potash, antimonials, mild diluent, subacid drinks, cathartic enemata, and, when preternatural throbbings of the arteries and palpitations of the heart follow the abstraction of blood, large doses of opium, black drop, or hyoscyamus, may be given in combination with calomel and antimony, to which when the powers of life are considerably prostrated, camphor may be added. Mercury, pushed to the extent of producing slight soreness of the mouth, has been recommended by Hope, Berndt, and Copland. But from the tendency of this article to occasion preternatural excitement of the heart and arteries, when administered so as to produce its constitutional effects, we should be reluctant to employ it in that manner, except in those cases in which the arteritis is induced by syphilis. After sufficient depletion, Hildenbrand recommends the acetate of lead and digitalis, and from the power possessed by both of these agents in moderating the activity of the circulation, we doubt not they may be sometimes useful when employed with proper discrimination. Neither of them should be relied on to the exclusion of more important means, nor will they be proper in the very advanced stage of the disease, when typhoid symptoms have made their appearance. Colchicum has also been suggested by Copland; and when the intensity of the inflammation is considerably subdued, leaving a preternatural throbbing of the arteries, which is dependent on a state of morbid nervous erethism of those vessels, prussic acid might perhaps be employed with advantage.

"When the disease occupies a superficial artery, as for example, in the extremities, the neck, etc., after sufficient blood has been detracted by leeches, the part may be constantly covered with refrigerant and anodyne lotions, or if these should disagree, tepid ablutions may be employed with advantage. In addition to these applications, Berndt recommends, after the inflammation has lost its active character, the employment of warm moderately exciting aromatic fomentations, lotions of muriate of ammonia dissolved in vinegar and water, and frictions with mercurial ointment. (Rust's *Handb. der Chirurgie.* II. 298.) Under the same circumstances, a blister applied over the part, so efficacious in some cases of phlebitis, might possibly produce a good effect. Revulsives will also be useful in the advanced stages of inflammation of the large arteries of the splanchnic cavities. (See *Aorta.*)

"The various complications of the disease with the several forms of fever,—with erysipelas, gangrene, etc., must be managed upon the general principles proper to be observed in the treatment of those diseases. As these complications are seldom observed, except when the vital powers have become considerably prostrated, blood-letting to any considerable extent will seldom be admissible, and the chief reliance must be placed upon mild antiphlogistics, and those means which, by exciting the several emunctories to the performance of their proper functions, will tend to separate from the mass of the circulating fluids, those materials which are generated in the blood, and tend to irritate the vessels. When obliteration of the arteries has taken place, giving rise to gangrene, the case must be managed according to the rules laid down in the article *Mortification.*

"It is scarcely necessary to subjoin, that during the whole treatment, perfect quietude of both body and mind should be rigorously enjoined. The patient should be strictly confined to a light farinaceous diet, with iced, or cool demulcent drinks; and even during convalescence it will be necessary to restrict him from all animal food for a considerable time. Every source of irritation, both physical and mental, must, in short, be carefully avoided, since the heart and arteries are preternaturally susceptible, and owing to their intimate sympathies with the other organs, they will be seriously influenced by an active impression made upon any part of the system.

"The *treatment of chronic inflammation* of the arteries may be dismissed in a few words. As the disturbance it occasions is seldom observed until the disease has advanced so far as to occasion extensive transformation of the arterial tisues, its existence is not known while it is in a condition to be cured. When these transformations of texture have taken place, it is beyond the reach of our remedies, and all that can be done is to obviate or remove the inconveniences they may occasion. They are chiefly such as arise from impaired circulation, and when they give rise to congestions of the left side of the heart, or of other organs, these must be removed by repeated small abstractions of blood, mild aperients, a proper attention to diet, and an avoidance of the ordinary sources of irritation. In some cases, where there is a loss of tonicity, unattended with serious changes of structure, chalybeates, and other tonics, with the shower-bath, may be useful."

We take the liberty of making two suggestions to the enterprising publishers of the work before us. First, the wood cuts with which Dr. Geddings' Special Anatomy of the Arteries, is (nominally) illustrated, may fairly be considered as a disgrace to the article. Secondly, In the original prospectus it was stated, that the work, it was expected, would be comprised in 40 numbers, making eight volumes, the cost of which would be twenty dollars. Under this expectation, no doubt, many country physicians became subscribers, when if they had supposed the Cyclopedia would ultimately extend in price to 50 or 60 dollars, they would have declined. Now, the 9th part, making almost a fourth part of the whole of the work proposed, does not carry us through the letter A. At this rate of advancement, more than a hundred numbers will be required to complete the Cyclopedia; the publication of which will not be finished under several years. This augmentation of the limits originally prescribed, seems to us an inadmissible liberty; and one, moreover, which is attended with no particular advantage to the profession. Such a work ought, properly, to be a condensed book of reference; from which a great number of things to be found in all the standard works, might, with advantage, be excluded. We make these remarks in a spirit of perfect good will towards the Cyclopedia, and under the conviction, that it would be rendered more extensively useful, if they should meet with some attention.

Art. IX.—Pulmonary Consumption.

A Treatise on Pulmonary Consumption, comprehending an inquiry into the causes, nature, prevention, and treatment of Tuberculous and Scrophulous Diseases in general. By James Clark, M. D., F. R. S., Consulting Physician to the King and Queen of the Belgians, and Physician in ordinary to their Royal Highness, the Duchess of Kent and the Princess Victoria.—Philadelphia: Carey, Lea, and Blanchard—1835. p. p. 296. By the Jun. Editor.

No subject in pathology, has received more attention, for the last twenty years, than lesions of the lungs; and few, perhaps, at the present period, are better understood. The researches of Laennec have done more in pulmonary disease than those of any other, notwithstanding Andral and Louis have, by their discriminating minds and extensive observations, given a precision to the subject of tubercular disease, previously unknown even to this able writer; still they have, in general, confirmed, rather than altered, the opinions of their countryman.

Broussais, amidst his varied fantasies of exclusive solidism, attributed the formation of tubercles entirely to a local inflammation, and it is probable that this opinion is still prevalent, to a certain extent, at least among his followers. The most careless observer must be aware, however, that inflammation of all the tissues of the lungs is frequently present, without leaving a single trace of tubereulous secretion. It is true, inflammation sometimes appears to develope tubercles in scrophulous habits, still it is not certain that they did not exist, to some extent, long before the inflammation occurred. It may also arouse a previous predisposition to this peculiar secretion, which might have remained inactive, for a longer or shorter time, had no such irritation superseded. The distinguished men already named, have, to a great extent however, dissipated the mists of error which, but too frequently, enveloped

the pathology of Broussais, and proved, beyond a doubt, that tubercles may exist in the lungs, where no traces whatever are to be found of previous inflammation. A knowledge of this fact is of much importance in the treatment of pulmonary diseases, for where consumption and inflammation of the lungs, acute or chronic, are considered identical, or related as cause and effect, many individuals afflicted with thoracic diseases, are abandoned as utterly incurable, while a judicious treatment might have saved them from an untimely grave.

Our author does not consider tuberculous lesions, whether in the lungs or elsewhere, as local, but affirms that they have their origin either in some hereditary taint, or a morbid state of the constitution, induced by various foreign causes. This, undoubtedly, is the true pathology of the disease, for tubercles, according to Louis and Andral, are seldom found, to any extent, in the lungs, without being also present in some of the abdominal or other vicera. He believes, that true phthisis may often be prevented, but never, or but very seldom cured, even in the incipient stages. After the disease is fairly established, he thinks it would be quite as impossible to cure it, as to restore vision after the eye was destroyed or the functions of the brain, after it had been reduced to a pultaceous mass. The only hopes of saving the individual predisposed to consumption, is to prevent the formation of tubercules in the system, by a judicious treatment. Our author regards true tuberculous phthisis as almost exclusively hereditary, and seldom arising from any inflammatory lesion of the thoracic organs. We do not know what differences there may be between the constitutions of Europeans and Americans, but it is certain, that while the greater portion of the consumptions of our great valley may originate in some vice of nutrition which is hereditary, still a large number of cases depend upon secondary causes, and hence we should persevere in our efforts to cure our patients, especially as it is extremely difficult to draw the distinction between *curable* chronic inflammation of the lungs, and *incurable* tubercular consumption.

The amount of tubercular disease in Great Britain and Ireland is certainly alarming. A few years since, Dr. Young and some others, inferred from the bills of mortality that one-fourth of all the deaths occurring in both, were the offspring of consumption; but our author supposes that this estimate is too low, and proposes one-third, as the proper amount. This is certainly too high for the United States, at least for the Valley of the Mississippi; for it is probable, that consumption does not occasion more than one-eighth, at furthest, of the deaths which annually take place in this wide extent of country.

According to the observations of Dr. Clark, consumption is on the increase among the middle and upper classes of society, in Great Britain. This is probably the result of their modes of living, together with the mental excitement to which they are occasionally subject. If the increase of disease should be rapid, or if it is transferred from parent to offspring, the time will eventually arrive when the aristocracy will disappear. This will take place earlier in England, than in those countries where all classes of society mingle, in the course of a few generations, by marriage.

Our author designates the particular morbid condition of the system, which gives rise to the deposition of tuberculous matter, upon the application of slight exciting causes, *tuberculous cachexia*. This state, he observes, may exist from birth, or may be acquired at almost every period of life. When hereditary, it is manifested by a peculiar modification of the whole organization, which he describes as follows: p. 18.

"The countenance generally affords strong indications of the presence of this affection; in early childhood it has a pale, pasty appearance, the cheeks are generally full, and the upper lip and nose tumid. If the complexion be dark, the color of the skin is generally sallow; if fair, it has an unnatural white appearance, resembling blanched wax rather than healthy integument; and the veins are large and conspicuous. At a more advanced period of youth, the character of the constitution is still more clearly indicated by the countenance. The eyes, particularly the pupils, are generally large, the eyelashes long; and there is usually a placid expression, often great beauty of

countenance, especially in persons of a fair florid complexion. On the other hand, in those of a dark complexion, the features are generally less regular, and the skin is commonly coarse, and of a sallow, dingy hue; although there are many exceptions to this, in the fine dark eye, regular features, and delicate skin of such persons. But it is far more easy to distinguish than to describe with accuracy the tuberculous physiognomy, as it varies in every intermediate shade, between the pale, faded, but changing color of persons little under the influence of this morbid condition, and the peculiar permanent sallow cast of countenance which attends the confirmed cachectic state.

In early infancy there is little remarkable in the form of the body; it is generally large, but has not the firmness of health. As the child increases in age, we find that the different parts are not well proportioned, and there is a want of symmetry in the whole. The head is often large, the trunk small, the abdomen tubid, and the limbs are unshapely, being either large and clumsy, or disproportionately slender with large joints: but this is only the case in the more perfect examples of hereditary tuberculous cachexia. The growth of the body is also generally unsteady in its progress; very often it is slowly and imperfectly developed; in other cases it is unusually rapid, particularly towards puberty.

The physical powers are generally below the usual standard. The limbs, though full, are soft, and have neither the form nor the firmness of health. The circulation is generally feeble, as is indicated by a weak pulse and cold extremities. This state of the circulating system forms, I am disposed to believe, an element in the tuberculous constitution; at least I have rarely found it wanting, and regard it as affording an explanation of many of the phenomena of the disease. A full development of the body and great muscular power are not, however, incompatible with a degree of tuberculous cachexia. Several of our celebrated pugilists have died tuberculous. Independently of their bearing on the present subject, such examples deserve attention, and showing the effect of training in increasing the strength even of the tuberculous system.

The functions of organic life are all more or less imperfectly performed, but those more immediately connected with nutrition, particularly the digestive function, are most evidently deranged. Digestion is rarely well performed; the bowels are irregular, more frequently slow in their action than the reverse, and the evacuations have not the appearance which they are known to possess in health. The urinary secretion, also, deviates from the healthy characters, being commonly turbid, particularly when the bowels are costive.

The cutaneous functions are very generally in an unhealthy state; the skin is either soft and flaccid, or dry and harsh, and chronic eruptions of the dry, scaly character, are frequent. In general the insensible perspiration is defective, although copious partial perspirations are common, particularly on the feet, where they often have a fetid odor. But of all these disordered functions, that which claims our principal attention, because it is the primary one, and from it arise most of the others, is the disorder of the digestive organs. The dyspepsia of the tuberculous constitution has peculiar characters by which it may be generally known."

Our author does not think that consumption is connected with any special temperament. He says all are equally obnoxious to it. The strumous dyspepsia of Dr. Todd, which is often the cause of the disease, also attends it in any or all of the temperaments. This affection of the bowels, in children especially, is characterized by the following symptoms, which cannot be too strictly studied. p. 21.

The tongue is redder than natural, especially towards the extremity and along the margins; the anterior part is thickly spotted with small red points of a still brighter color, the central portion being more or less furred, in general according to the duration of the disorder; sometimes the tongue is covered with a dirty whitish fur, through which the red papillæ project; in which case the central part of the tongue is often dry and of a brownish color in the morning. There is generally some thirst: the appetite is variable, more frequently craving than deficient, seldom natural; and the breath is fetid. The bowels are generally confined, though occasionally they are too loose; the evacuations are always unnatural, generally of a pale, greyish colour, of the consistence and appearance of moist clay; and they are often mixed with mocus and partially digested food. The urine is often turbid, sometimes high-colored, and at other times too abundant and pale. The skin is generally harsh and dry, or subject to cold perspirations, particularly the hands and feet, which are habitually cold; copious partial night-sweats are common. The sleep is seldom sound,—the child is restless, and talks in his sleep, or grinds his teeth.

When this disordered state has continued for some time, the complexion loses its natural color, and the face has a pasty, faded aspect; the child is languid, disinclined for exercise or play, and generally fretful; a train of secondary disorders, also soon appears, as a consequence of the irritation of the digestive organs. The internal fauces become full and red, inflammatory sore-throats are common, and the tonsils often become permanently enlarged. The nose is generally dry, or discharges thick mucus in large quantity; and epistaxis occasionally occurs. The eye-lids are subject to chronic inflammation; and eruptions behind the ears and on the scalp, or other parts, are very frequent. Copious discharges of mucus, sometimes mixed with blood, take place from the bowels, and from the bronchial membrane; and are indeed common from all the mucous surfaces. The brain and spinal marrow frequently become the seat of secondary irritation, and hydrocephalus, epilepsy, and chorea, or paralysis may be the consequence; but the most frequent and most important of all the consequences of this disordered state of the digestive organs is tuberculous cachexia."

Our author, like his predecessors, has divided consumption into a variety of stages, and traced the symptoms, common

to each, with much accuracy. He has also given the physical signs, peculiar to the various stages, which should be carefully studied. The first symptom of tubercular secretion in the lungs, is an occasional cough, especially in the morning, with the expectoration of a clear ropy saliva, which seems to escape from the posterier fauces. The breathing gradually becomes short, and somewhat difficult, the cough is more troublesome, especially when ascending elevations, the pulse is a little quick after meals or towards evening, with slight chilliness, followed by more or less thirst and heat, especially of the palms of the hands and soles of the feet. The febrile symptoms pass off by perspiration, which is more or less profuse as the disease advances.

At this period, the countenance is paler than usual, or changes its color with much rapidity, after the least exercise. There is also a general languor both of body and mind, with a harsh, dry skin, softness of the muscular system, and general emaciation. The lungs contain, at this time, more or less tuberculous matter, in a crude state. The process of softening has not yet commenced, and the pulmonary tissue is but little changed, even in the immediate vicinity of the morbid secretion,—facts which clearly prove, that the constitutional disturbance is not the result of the tuberculous deposit.

At this period, the physical signs of the disease are generally very obscure. Auscultation reveals but little to us unless the tuberculous deposit be very extensive, and even then it requires an experienced ear to decide on the true nature of the disease. As tubercles are almost always formed immediately under the clavicles, it is here that the stethescope will first reveal to us the confirmed respiratory murmur of the early stages of true phthisis.

We will not follow our author through his detail of the various symptoms peculiar to every stage of consumption. Suffice it to say that it is in this first stage alone that any thing is within the power of the physician. When the second, marked by a change in the expectoration, with increased cough, fever preceded by chills, and hurried respiration, com-

mences, he can only paliate symptoms, and thus render the path of his patient to the grave as pleasant as the various circumstances will permit.

After giving the symptoms of acute or rapid consumption, which vary from those of the others, only in being more severe, and running their course with more rapidity, our author remarks, p. 36:

"The error into which this variety of acute phthisis is calculated to lead an inexperienced or careless practitioner, is that of considering and treating it as a purely inflammatory disease, and using more active measures, and giving a more favorable prognosis than the case justifies. It is true that inflammation in some part of the respiratory organs often exists, complicating the tuberculous disease; but it requires to be treated with much more delicacy than a simple inflammation, and a very different prognosis should be given. An inquiry into the previous health of the patient and careful observation of the symptoms will alone unveil the real nature of the disease."

Since pathological anatomy has received the special attention of the profession, consumption is found to be a frequent disease of infancy and childhood. In a single hospital in France, in which children alone are received, one of the physicians states that five sixths of those who die there are either cut off by consumption, or have tuberculous lungs. Our author devotes several pages to the consideration of this species of consumption. He infers that the tuberculous matter is almost always deposited in the bronchial glands, and hence it may occasionally be made to disappear, by a judicious treatment, as is sometimes the case in the lymphatic glands of the neck. This termination, however, is no doubt very unfrequent, and it is quite probable that the disease is almost, if not quite, as fatal as it is in later life. The writer of this review thinks he once succeeded in arresting a case of this kind, by the use of gentle emetics, cathartics and iodine, with slight irritation to the surface of the enlarged glands on the neck, but he is not sure that the disease is cured, although the child has enjoyed good health, *to all appearance*, for the last two years.

Our author next devotes about fifty pages to the consideration of the symptoms of tuberculous phthisis in detail, as well

as the character of the various lesions apparent upon *post mortem* examinations. In the whole of which he has manifested much research and acute observation. He next proceeds to treat of its cure, when he mentions a few cases of recovery, principally drawn from the pages of Laennec and others, without attaching much importance to any of them. We think this is correct, for it is probable that these patients might have recovered without the use of medicine. He recommends the curative means to be directed to the general system, with but little reference to the local disease.

He next gives a number of diseases which attend and complicate pulmonary consumption. The most important of these are lesions of the abdominal mucous tissue, which we think form component parts of it. It is true, ulcerations of the epiglotis, larynx, trachea, &c., occur late in the disease, and may fairly be said to be its offspring, yet the irritation of the abdominal vicera, producing dyspepsia, diarrhœa, and bilious derangement, seem to precede in many instances, the tubercular deposit, and it is more than probable, that they all originate in a common state of the general system. As all of these, together with the fatty transformation of the liver and fistula in ano have been noticed by other writers, we shall proceed to notice his remarks on the duration of consumption, drawn from Louis and Bayle. From these it would seem, that the greatest proportion of deaths occur at from five to eight months after the attack, and that the mean duration of the disease is twenty-three months, although, in a few instances it may last nearly as many years. It also appears, that the two sexes among whites, are about equally liable to the disease, while among blacks, the proportion of deaths among females is increased to nearly one and a half per cent.

We shall pass over the various causes to which he attributes pulmonary consumption, by remarking, that he thinks it is generally hereditary, and proceed to notice his chapter on

PREVENTION.

As he deems the disease hereditary, he thinks the first abuse necessary to be corrected, is in marriage. Families

inclined to consumption should never intermarry; a wise proposition, it is true, but one not likely to be attended to, unless the parties relinquish their entire agency in the matter, to the doctor and the parson. Relatives should not intermarry, as such alliances evidently tend to aggravate hereditary predisposition, as well as to deteriorate the intellectual and physical powers of the entire generation. Pregnant females should also guard their healths in the most scrupulous manner, for it is more than probable, that let the physiological connexion between the mother and child be what it may, lesions may be commenced in utero, which will utimately destroy the child, or at least very much impair the energy of its constitution. After the birth of the child, the principal means of prevention may be sumned up under the heads of food, clothing, dress, bathing, air, exercise, and residence. We have neither time nor space to follow our author through what he has said under these heads.

We will now notice our author's remarks on the treatment of tuberculous cachexia, and then close our account of his work.

For the treatment of this constitutional affection, he relies principally on alteratives; such as mercury, iodine, antimony, taraxicum, sarsaparilla, and the alkalies. The most important of these, however, appears to be iodine; and hence we shall let him speak for himself on the subject. We do not see that he uses the others in any way different from his predecessors. On page 235 he observes:

"The action of iodine on the animal economy in a great degree resembles that of mercury. They both promote the excretory functions, and it is thus, most probably, that they increase the activity of the assimilative functions. Mercury is more quick in its operation than iodine, and we are better acquainted with its management; but the operation of iodine on the economy appears to be more general. Its action on the uterine system is decided; on the secreting functions of the liver and kidneys its operation is also evident; and it appears to promote the insensible perspiration. It thus diminishes abdominal plethora, promoting the activity of the eliminative functions, and, through them, of the assimilative. But in whatever we may attempt to explain its mode of operation, the beneficial effects of iodine on strumous constitutions are undoubted. Under its influence, when it

is judiciously employed, the patient recovers flesh, strength and color; hitherto pale, relaxed, and feeble, he becomes full, strong, and florid; glandular swellings disappear or are greatly reduced; scrofulous ulcers heal; swellings of the joints are reduced, and the limbs restored to their natural proportions; and the condition of the whole animal economy is greatly improved."

This article, however, should never be employed when the bowels are irritable, or when there is great irritability or sensibility of the nervous system in general. After venesection, resinous and mercurial cathartics, and gentle narcotism, it may be used with much advantage, especially in *young* subjects. We have derived much benefit from its use in several instances. In one instance, a colored boy, five or six years of age, was effectually cured, to all appearance, after the glands about the neck had become very much enlarged. He continued its use for nearly eleven months. It was given in solution, with the hydriodate of potash in water, in the proportion of one-half of a grain of the former, and a grain of the latter to four ounces of distilled water. Its use was preceded by mercurial cathartics. When it produced unpleasant effects on the bowels, it was suspended for a few days, or accompanied by small portions of blue pill, in combination with hyosciamus or the salts of opium. Dr. L. C. Rives, in a former number of this Journal, speaks highly of its effects in scrophulous diseases. W. W.

MISCELLANEOUS INTELLIGENCE.

ANALECTIC, ANALYTICAL, AND ORIGINAL.

I.—ANALECTIC,

Ad Sylvas Nuncius.

Art. 1. *Bulletin Generale de Therapeutique Medicale et Chirurgicale, of May*, 1835.—(Some reflections upon the Medication entitled Diuretic.) The author of this paper goes into a short discussion of the reasons of the immense richness of the materia medica, and the real poverty of the therapeutics which have been bequeathed to us. He attributes it, in a great measure to the preceding age, having been too much in the habit of watching every new phenomenon in the operation of a prescribed substance, and setting it down as a specific for that effect. This produced, at the commencement of the present age, a re-action; and the study of the physiology and anatomy of patients and diseases was carried so far, that we almost forgot how to treat them. This view is strikingly applicable to the class of specific diuretics.

We understand by a diuretic, a medicine, which, when introduced into the economy, manifests such properties, that, under their influence, the subject voids a greater quantity of urine than ordinary. With so vague a definition, we have a vast number of diuretics, which are only so relatively; depending on the condition of the body with regard to the state of the pulmonary, cutaneous and intestinal exhalations; whether an increased secretion of urine is not necessary to maintain the equilibrium of the functions, etc. In order to ascertain whether a substance be a diuretic or not, we must compare the quantity of urine with the liquids taken into the digestive organs; we must ascertain exactly the state of the organism at the moment of the excreture, and we must compare the quantity of the urine with that of the water drank.

We should not place under this head, medicines which change a morbid condition of the organism, in which, by the simple fact of its cure or relief, it happens that the patient will discharge, by an abundant watery secretion, a liquid with which his tissues or his cavities have been filled. Thus, in cases of long continued intermittent fever, where the spleen has been enlarged or hardened, the tissues all appear infiltrated, and the peritoneum filled with serum, when treated with sulphate of quinine in large doses, (20 to 40 grains a day,) they lose the excessive volume of the spleen, the returns of fever, the general œdema, and the swelling of the abdomen, at the same time that large quantities of urine are voided. The sul. quinine is the diuretic here.

Likewise in cases of general infiltration, resulting from diseases of the heart, in which digitalis and repose have been prescribed, as the heart returns to its proper action, and the circulation resumes its normal rhythme, urine in large quantities is voided, and the œdema disappears. Repose and digitalis are here the duretics.

In the convalesence of long and debilitating disorders, when the patient begins to resume the sitting or standing posture, the inferior extremities become infiltrated in a greater or less degree, and it is only by degrees, as the strength returns in consequence of the regimen followed, and the tonic remedies prescribed, that the œdema disappears after some days of diuresis. The tonics employed to hasten and confirm the convalesence in this case, remove the fluid.

It sometimes happens, that subjects weakened by passing nights in the rain and cold, and exposed to the inclemencies of the seasons, are rapidly swelled up by a general leucophlegmacy. As this is not the result of an organic alteration, a few days of confinement to the bed and warm clothing are sufficient to cure it, and remove the œdema, frequently by the urinary passages.

The internal administration of opium, or the application of the salts of morphine, either internal or applied to the dermoid covering, often produces a retention of urine. As soon as the exhibition of them ceased, the pain and distress felt at the neck of the bladder is relieved, and the patient, then urinating abundantly and freely, seems as if a true diuretic had been administered to him.

In cases of irritation of the kidneys, whether produced by a calculus or otherwise, or by sympathy with an irritated bladder, we know that the best diuretic consists in calming the sympathetic or local irritation of the kidneys; since, under the influence of these means, the urine returns more natural and more abundant.

Finally, in almost all serious affections, do we not see the diminished, thickened and suppressed urine, reappearing more and more natural and abundant, under the influence of the treatment which relieves the principal disorder.

By thus rigorously distinguishing between diuresis, relative and direct, we shall be able to class those substances as diuretics which are properly such; and it is only in this way, that we can relieve ourselves of the ancient pharmacological chaos, or the modern therapeutic nullity. — *U. S. Medical and Surgical Journal, November*, 1835.

2. *On the Theraputic employment of Vapor baths in certain ocular Affections.* — The utility of vapor baths, either simple or aromatic, in a great variety of ocular diseases, although recommended and prac-

ticed by several distinguished physicians, is not sufficiently appreciated by the medical and general public.

This, doubtless arises, in many cases, from the difficulty of procuring an apparatus adapted to the purpose, especially in villages and country places. The Russians make a vapor bath by projecting a fine stream of water upon a heated stone placed in a close room, by which means the body is rapidly enveloped in steam. This is a very common custom with the common classes there, and the wives of these classes, who, during their pregnancy and puerperal state, take these baths enjoy much better health than those of the upper classes, who daily forsake the old national customs. Purulent ophthalmia is much less frequent with the new-born infants of the poorer than of the richer class. Who will deny, that of 100 cases of purulent ophthalmia in new-born infants, 95, at least, are attributable to a catarrhal inflammation of the palpebral and ocular conjunctiva? Is not this affection as much the result of a general refrigeration of the dermoid covering, as of the impression of the cool air upon the organ of vision?

In Egypt, the newly arrived European, when his conjunctiva is observed to be injected, and to put on the catarrhal form of the Egyptian ophthalmia, so rapid and so cruel in its results, is greeted with the exclamation, "How do you sweat?"

In incipient catarrhal ophthalmia of children, inquiry should always be made by the physicians as to the state of the skin: and if it is dry, cold and rough, it should be exposed to the vapor of emollient and sudorific plants: it should be enveloped in flannels, impregnated with vapor; and as the skin resumes its functions, the conjunctival coryza, which rapidly degenerates into an inflammation, with such a frequent sorrowful termination, will begin to disperse.

To an inflamed lachrymal tumor, an inflammatory tumefaction of the eyelids, either idiopathic, or following variola, or any other exanthematous affection, no more rational application can be made than emollient, resolutive, calming vapor bathings. In rheumatic or gouty sclerotic affections, vapor baths, applied to half the body, are found eminently useful. These may be obtained by putting the body in a cask, and filling it with vapor, after the Russian mode. This constitutes an excellent revulsive, which may at will be converted into a powerful derivative, by allowing it to proceed, in the lower extremities, to vesication, which is as active as, and ten times less painful, than the dry vesication.

The author of this paper has often employed calming and narcotic vapors in convulsive and cancerous affections of the eyelids and of the eyes with success. The leaves of the *laura-cerasus*, dried and cut up, and those of the *datura stramonium*, were the principal assistants. There are a great number of specific ocular affections, resisting ordinary treatment, which are cured by dry fumigations. Such are syphilitic ophthalmias, iritis of the same nature, exostoses, and tumors of the orbit, which are easily resolved under the employment of the vapor of the mercurial powders of Lalonette, of cinabar, or of the black sulphuret of mercury. Arsenious fumigations, directed to the cancerous pimples of the eyelids, often appease violent pain. Three cases are related, to show the rapidity which obstinate and long standing ocular affections are relieved by these means.

3. *Of the actual state of the Theraputics concerning the more serious contractions of the urethra.*—Up to the time of John Hunter, all the means used for the removal of this disorder may be reduced to simple *gradual dilitation;* for the treatment of the ancients with bougies, possessing various balsamic properties, amounts to nothing more. *Cauterization*, for some years, made considerable noise; but it has now lost much of its reputation. Caustics frequently prove worse than bad. A solution of *lapis infernalis*, of two grains to the onnce of distilled water, injected, or a light application of the salt itself, will sometimes prove useful, particularly when the structure is accompanied with a chronic discharge. The injection should be sent in and returned, taking care to prevent its going into the bladder, by pressing with the fingers behind the stricture. This application has been successful also in chronic luecorrheas. *Scarifications* are now entirely out of date. No prudent man will make use of a means so injurious in its results, and so dangerous in the tube of the urethra.

Progressive dilitation, by means of ordinary bougies, is now almost the only means to which practitioners direct their attention. Cauterization, as described above, is sometimes added to this. — *Ibid.*

4. *New facts relative to the action of creosote, and to its theraputic value.*—Besides the now well known efficacy of this application to carious teeth, several cases of which are related by M. Fremanger, it has been found by this gentleman to be very useful in ulcerations of other bones. He cured with it a scrofulous caries of the osseous extremities of the first and second phalanges of the indicator finger of the right hand, with a fistulous wound traversing the articulation. This case had resisted iodine and mercurial preparations for six months; but in less than two months, a radical cure was obtained by the creosote. A seton of cotton was passed through the fistula, which was kept moistened with pure creosote for six days: this was then removed, and injections of strong creosote water employed, (15 drops to the ounce,) which was finally withdrawn for the following:

Cerate, ʒi.
Oil of sweet almonds, ʒi.
Creosote, gtt. xxx.

by which its action was for a long time felt.

M. Fremanger found that creosote has the property of opposing immediate union, which he supposes is occasioned by an inorganic pellicle constantly forming on the surface of the wound. — *Ibid.*

5. *Of the action of tannin upon the organic salifiable bases, and the applications which may be derived from it for medicolegal researches.* By Ossian Henry.—Among the properties by which alkaloids or vegetable alkalies, are distinguished, is that of their precipitation by an infusion of nutgalls, a property which is common to them all. Whether it is tannin, or gallic acid, which produces this effect, is a question which has not been entirely settled.

By means of this substance, M. Henry has been enabled to ascertain with great certainty and facility the quantity of quinine and cinchonine contained in the bark of the quinquinas. He has remarked that tannin, in precipitating the vegetable alkalies, produces with

them very voluminious white, caseous compounds, easily collected, and generally insoluble in cold water; whereas, when potash, soda, chalk, or amonia is used, large quantities of them disappear, altered and dissolved.

The action of tannin upon the organic salifiable bases is precisely analogous to its action upon metalic oxides; that is, it combines with them. producing true salts. These saline compounds may be analyzed either by gelatine or humid parchment, or by double decomposition, with the aid of salts of tin, lead, antimony, peroxide of iron; or better still, by barytes, chalk or magnesia. The tannin is separated, and combines with the animal matter, or with the metallic oxides; and the alkaloid being set at liberty, either remains free, or unites with the acid of the decomposed metallic salts. In acting thus upon the aqueous solutions, diluted and acidulated with one or two drops of sulphuric acid, he found quinine, cinchonine morphine, codeine, narcotine strychine, brucine veratrine, delphine and emetine, with all their primitive characters. These are, doubtless, all bitannates, formed by the union of one atom of the base with two of tannic acid.

These salts are formed by adding an aqueous solution of pure tannin, or the extract of gall-nuts, or even any other liquid containing tannin, to a solution of a salt with a vegetable alkaline base, diluted, with slightly acidulated water.—*Ibid.*

6. *Notice of some experiments on the connexion between the Nervous System, and the Irritability of Muscles in Living Animals.* By Dr. J. Reid. With Observations by Dr. Alison.—Although physiologists are still divided in opinion as to the question whether nerves furnish a condition necessary to the irritation of muscles, (*i. e.* whether every stimulus which excites a muscle to contractions acts on it through the intervention of nervous filaments,) they have now very generally abandoned the once prevalent theory, that the irritability of muscles is derived from the brain or spinal cord, *i. e.* that muscles are continually receiving, through their nerves, from those larger masses of the nervous system, supplies of a certain influence or energy, which enables them to contract; and that some of the statements of Dr. Wilson Philip, in particular, are generally regarded as decisive against this theory.

Dr. Wilson Philip found by experiment, that the irritability of a muscle of which the nerves were entire, was exhausted by applying a stimulus directly to the muscular fibres, (sprinkling salt on them,) even more quickly than that of a muscle of which the nerves had been cut, and where all communication with the supposed source of nervous influence or energy had been cut off; and he states generally that a muscle of voluntary motion, if exhausted by stimulation, will recover its irritability by rest, although all its nerves have been divided.

But in opposition to this statement, and in support of the old theory of nervous influence continually flowing through certain of the nerves into the muscles, it has lately been stated by Mr. J. W. Earle, that when the nerves of the limb of a frog were cut, the skin stripped off, and the muscles irritated by sprinkling salt on their fibres,

until they had lost their power of contraction, although they did not lose their power much more quickly than when the nerves were entire, yet *they did not regain their power*, although left undisturbed for five weeks; while the muscles of the limbs of another frog, similarly treated, but of which the nerves were left entire, completely recovered their irritability.

It occurred as a fundamental objection to the experiment of Mr. Earle, that in the case where the nerves had been divided, the muscles had become inflamed; being found at the end of the five weeks "softer in their texture than natural, a good deal injected with blood, and with some interstitial deposition of fluid in them;" while in the limb to which the salt had been applied, but of which the nerves were left entire, and where the irritability was recovered, "although the colour of the muscles was rather darker than natural, their texture remained unchanged, and there was no interstitial deposition of fluid in them."

In these circumstances it might evidently be supposed that it was the inflammation and disorganization of the muscles, not the section of the nerves, which prevented the recovery of the irritability in the case where the nerves had been cut; and it became important to have the experiment repeated, with care to avoid such injury of the limb of the animal as should cause inflammation to succeed the section of the nerves.

With this view Dr. Reid performed a number of experiments on frogs, in which the irritability of the muscles of both hind-legs were exhausted or greatly diminished by galvanism, after the nerves of one leg had been divided and the lower part of the limb rendered perfectly insensible and incapable of voluntary motion, (but without stripping off the skin,) while the nerves of the other had been left entire. The state of the muscles of both limbs was examined after some days. The results of these experiments were not uniform, but in several, where every attention to accuracy seemed to have been paid, the irritability of the muscles in the palsied limbs appeared to be *restored as perfectly as in the others;* contractions being excited in them, in several instances, by the galvanism from four or even two plates; whereas, they had formerly been irritated until they were no longer excitable by that from fourteen plates.

That the muscles which thus recovered their irritability had lost all nervous connexion with the brain or spinal cord, was proved, not only by their obvious insensibility, but by afterwards cutting off the heads of the animals and forcing a probe along the spinal canal, which excited forcible contractions in all parts excepting the palsied limbs.

Dr. Alison's paper contained the details of several of these experiments; and he stated in conclusion, that a *positive* result in such an inquiry must always outweigh a *negative* one, (particularly where a source of fallacy attending the latter can be pointed out,) these experiments appear fully to justify the assertion of Dr. Wilson Philp, that a muscle of voluntary motion may recover its irritability by rest, although all its nerves be divided; and that they afford, perhaps, more direct evidence than any others in support of the doctrine of Haller, now generally admitted in this country, that the property of irritability in muscles is independent of any influence or energy continually

flowing from the nervous system, although, like every other endowment of living animals, it is subjected to the control of causes which act primarily on that part of the living frame.

Dr. Allen Thomson expressed a doubt whether these experiments warrented the conclusion drawn from them, not because he acquiesced in the theory to which they are opposed, nor because he called in question the accuracy of the results described to have been obtained, but because he knew that former experiments had failed in producing such diminution or exhaustion of the irritability of muscles as had been found by Dr. Reid; and conceived it possible that some of the numerous fallacies to which such experiments are liable, might not have been sufficiently guarded against.*

The accuracy of Dr. Reid's statement as to the great diminution or apparent exhaustion of the irritability of the muscles under the influence of the galvanism, and the subsequent recovery of the power, notwithstanding the devision of all their nerves, was satisfactorily established. It is to be remarked, however, that in these experiments, as usual in such cases, the limbs to which the galvanism was applied were kept moist by the same saline solution with which the galvanic trough was charged; and Dr. Thomson has observed, that when they are moistened with pure water, the diminution of the irritability under the excitement by galvanism is much less obvious. Hence he was led to suspect that the apparent loss of power in the muscles under that process might depend, not on the circumstance of repeated excitement, but on a degree, however slight, of injury to their texture by the action of the salt. This inquiry he proposes to prosecute farther; but in the mean time it is certain that by the usual process of galvanizing a living muscle moistened by a saline solution, a very great diminution of its irritability may be effected, which may subsequently be regained, notwithstanding the division of all its nerves; and as the fact of its recovery, not the cause of its dimination or exhaustion, is the point on which the inference drawn from these experiments rests, that inference may be held to be sufficiently justified.—*Fourth Report of British Association for the Advancement of Science.—American Journal of the Medical Sciences, November*, 1835.

7. *Notice of some Observations on the vital properties of Arteries leading to inflamed parts.* By Dr. Alison.—These observations were made with the able assistance of Mr. Dick, veterinary surgeon, on the arteries of the limbs of several horses, condemned on account of injury and inflammation there.

The immediate object of inquiry was, whether the totuous and strongly pulsating arteries leading to an inflamed part are really endowed with a greater vital power of contraction than sound arteries; and the method taken to ascertain this was to make a comparative examination of the condition of these arteries, and of the corresponding arteries in the opposite sound limbs, immediately on the animals being killed, (by blowing air into their veins;) and again after the lapse of 16 or 24 hours, when it is known that the tonic contraction, which takes place at the time of death, and is the indication of

*A Committee, of which Dr. Thomson was a member, was appointed for the repetition of the experiments, which has performed the duty assigned to it.

the only vital power which experiments authorize us to ascribe to arteries, has relaxed.

The animals were killed, and the observations made, at different periods varying from twelve hours to twenty days after the commencement of the inflammation, in the five cases of which an account was read. The extent of the inflammation was various. In all the cases, the artery leading to the inflamed part, when laid bare as high as the groin as soon as possible after the death of the animal, was larger in its whole length, *i. e.* had contracted less at the moment of death, than that of the sound limb. In two of the cases, where the inflammation was of long standing, and the coats of the artery appeared to have been effected by it, this vessel at the second examination appeared smaller than the artery of the sound limb, having not only contracted less at the moment of death, but dilated less after death, than the artery in the natural state. In the other cases the artery of the inflamed limb remained larger than the other at the second examination; and it was farther obvious that its elasticity was impaired, for when slit open and smoothed out, it had less power than the sound artery of recovering the cylindrical form.

In all the cases, the artery of the inflamed limb retained after death a considerable quantity of blood, while the other was almost empty; and that this was not owing to inflammatory effusion, preventing the artery of the effected limb from emptying itself at the time of death, was proved, in two of the cases, by cutting across the vessel, immediately on the death of the animal, a little above the inflamed part, whereby it had full opportunity to rid itself of its blood, if it had retained the power to do so.

One of these observations was made in the presence of Dr. Yellory, Dr. Clark, Dr. Fletcher, Mr. Broughton, Mr. Clift, and Mr. Bracy Clark: and it may be added here, that in a subsequent experiment, in which Dr. Alison and Mr. Dick were assisted by Dr. Fletcher. they obtained farther proof of the loss of elasticity in the artery of an inflamed limb, by finding that after it hed been distended by a given weight of mercury, (in the way practised by Poiseville,) it had less power than the corresponding sound artery, to contract on itself and expel its contents when the distending force was withdrawn. But this last experiment was made too long after the death of the animal to justify an inference as to the strictly vital power of the vessel.

Dr. Alison stated, that it seems now generally admitted by microscopical observers, that during by far the greatest part, and during the highest intensity of inflammation, nothing but dilitation or relaxation of the *small* vessels of the inflamed part can be perceived. If the present observations shall be confirmed by others, they will show more distinctly than any statements hitherto on record, that the same holds true of the *larger* vessels supplying an inflamed part. Now, there are two changes in the movement of the blood through the vessels of an inflamed part which seem well ascertained by many observations, viz: retarded movement or absolute stagnation, (*stase du sang.*) in many of the small vessels most affected, even during the height of the inflammation; and accelerated movement in the neighboring vessels, with greatly increased transmission; in a given time, through the whole veins of the part. This last change may, perhaps, be reasonably ascribed to the relaxation of the vessels giving

increased effect to the impulse from the heart; but it seems impossible to ascribe likewise to that relaxation of vessels, the former which is just the opposite change in the movement of the blood; and yet no modification of the action of any of the vessels, except simple relaxation, can be detected.

The fair inference from these facts therefore seems to be, that the phænomena of inflammation are truly inexplicable by any changes which occur, during that state, in the contractile power of the vessels containing the blood; and that, instead of seeking for an explanation of these phænomena in the state of *contractions* of any of the solids, we ought rather to look for it in the state of the *attractions* subsisting during the living state among the particles of the blood, and between them and the surrounding solids. And this inference the author thinks might be supported by reference both to other facts in the history of inflammation, and also to many other phænomena of the living body, both in health and disease.—*Fourth Rep. of British Association for the Advancement of Science.—Ibid.*

8. *Report of Progress made in an Experimental Inquiry regarding the Sensibilities of the Cerebral Nerves, recommended at the last Meeting of the Association.* By Marshall Hall and Mr. Broughton.—Some disagreement appears to exist amongst the results of the investigations regarding the sensibilities of the cerebral nerves, which demands farther experimental inquiry. A series of experiments has therefore been instituted at the request of the Committee of the Medical Section, and the establishment of Messrs. Field in Oxford street, London, was selected for the purpose of carrying the inquiry into effect; the horse and the ass, from their large size, being considered as the most favorable subjects for the free exposure of the nerves.

The properties of some of the cerebral nerves being admitted upon other grounds than experimental proof, this investigation was exclusively directed to the facial branches of the fifth pair of nerves, the hard portion of the seventh, the vagus, the spinal accessory, the glosso-pharyngeal, the lingual, and the sympathetic nerves. Upon the properties of the first, second, third, fourth, sixth, and the soft portion of the seventh pair of nerves no doubt or discrepancy exists.

It has long been known that the properties of the cerebral nerves are various. Thus, one nerve governs the function of motion; another that of some specific sensation, as of light or sound; and these properties are held independently of each other. To understand clearly the properties of nerves, it is also necessary to apply the test of experiment to their *roots;* for branches from two or more roots unite to form one nerve apparently, which may then assume two distinct properties, that is, the peculiar property of each root. This is exemplified in the origin and distribution of the nerves of the face.

The apparent discrepancies in the results of experiments probably depend much upon the indefinite manner in which certain physiological terms have been employed. Thus, *sensation* has been coupled *with* consciousness in some instances, and in others it has been supposed to exist *without* consciousness. In the present report the term *sensation* implies *consciousness.* It is considered as identical with *feeling*, and when violently excited it becomes *pain.* And this is

manifested by *general and instantaneous* efforts or struggles. *These are, therefore, the signs of sensibility.*

Three modes of judgment have appeared as necessary to be kept in view in the present inquiry in reference to the above definition:

1. It was observed that when a nerve of unequivocal sensibility was pricked or pinched, an *immediate and general* struggle followed. The facial branches of the fifth nerve are examples.

2. That when a nerve as unequivocally devoted to motion is pinched, there is an *immediate contraction of the muscles which that nerve supplies, and of no other muscles.*

3. That on pinching the par vagum, neither of the phænomena above noticed occurs; but by continuing the compression for a few moments, an *act of respiration and of deglutition follows, with a tendency to struggle and cough.*

Of these three phænomena the first only is considered as indicating the property of sensation, or the power in the nerve subjected to experiment to transmit sensible impressions.

The movements in the third instance appear to arise from secondary causes, *the mechanical irritation of the nerve not being attended with immediate consciousness.*

1. *Experiments upon the Facial Nerves.*—These nerves govern the actions of the face, and preside over the sensibilities of its different organs and surfaces. The first function is performed by the facial portion of the seventh nerve and a portion of the fifth. The second function is performed by the large portion of the fifth pair of nerves. Thus the fifth nerve possesses two distinct properties of transmission, one voluntary, the other sentient, in consequence of its having two distinct roots. One of these roots, the largest, has a ganglion attached to it, and is exclusively a sentient nerve. The smaller root has no ganglion, is insensible, and governs the motions of those muscles which it supplies. The first fact is easily gained by experiment, but the second is admitted upon other grounds, for the smaller root cannot be experimented upon in the living animal. It is to be observed that the larger root of the fifth nerve is divided into three branches, spread and ramified over the face, and frequently connected in its ramifications with branches of the seventh nerve; so that unless the experimental tests be applied to distinct branches, no certain response can be obtained as to their several properties.

Pricking or pinching the trifacial nerve was attended with instantaneous indications of consciousness; when its branches were divided, all sensibility ceased in the parts which they supply. The *lower* divided ends made no response when bruised, that the upper indicated sensation. The motions of the face, however, still remained unimpaired, until the seventh nerve was divided as near its origin as possible, when the organs which it supplies became permanently motionless. When this nerve was slightly pinched in its entire state, those muscles exclusively which it supplies were seen to be convulsed, without any *general* effort; when the compression was increased, and continued for a few moments, signs of uneasy respiration occurred. Pricking this nerve with a needle and cutting through it produced no struggle whatever, as is the case with the trifacial nerve. When the lower end of the nerve, after division was irritated, no movement followed; but on compressing the upper end, the same

signs were exhibited as when the nerve was irritated in its entire state.

2. *Experiments upon the Nervus Vagus.*—In the year 1820, Mr. Broughton experimented upon this nerve: the results were published in the *Quarterly Journal of Science of the Royal Institution.* It was found to be insensible when slightly pinched, pricked, or divided. The present experimental investigation confirmed this remark. It was also on the former, as well as upon the recent occasion, clearly shown that, when a forcible compression was continued a few moments upon the nervus vagus, a respiratory effort followed, and an act of deglution, with a cough and a struggle. In the recent investigation it was observable that when the nervus vagus was divided, mechanical irritation applied to the upper end of the divided nerve produced the same signs as when the nerve was entire. Every repeated compression of this nerve, (as was also the case with the seventh,) produced corresponding respiratory struggles; whilst a uniform, uninterrupted compression caused no repetition of the phænomena. An additional argument in support of the opinion that these effects are independent of any sensible property in the nerve itself is furnished by the fact that Dr. Marshall Hall has found precisely similar effects to occur in the turtle after its decapitation, on pricking the laterai spinal nerves, whether of the sentient or motory class.

3. *Experiments upon the Spinal Accessary Nerve.*—This nerve having been pricked without any response, was then slightly pinched and scraped; when the sterno-maxillaris muscle, the levator humeri, and other muscles of the neck exclusively were seen to contract at each application of this mechanical irritation. But when the forceps was applied firmly, and continued a few moments, similar effects were produced as with the vagus and the seventh. The branches of this nerve appeared to be equally destitute of sensibility with the root. The compression of the upper end, after dividing this nerve below its bifurcation, was followed by no effects, unless the pressure was made opposite the giving off of the anterior branch, when the same phænomena occurred as were exhibited in the entire nerve.

4. *Experiments upon the Glosso-Pharyngeal Nerve.*—When this nerve was pricked, scraped, or divided, no response was observed. The muscles of the root of the tongue were most probably set in motion by the compression of this nerve at intervals; but no opportunity occurred of bringing this part of the tongue into view. Neither in its entire nor divided state did any struggle arise from the continued compression of this nerve, which is therefore regarded as one simply of muscular motion.

5. *Experiments upon the Ninth Nerve.*—The sensible surface of the tongue is supplied by the ganglionic portion of the fifth nerve, whilst the muscles of its fore part are furnished with branches from the ninth nerve. No sign of sensation was evinced by mechanically irritating the trunk of this nerve, and its division was unattended with any sign of feeling or pain. But upon pinching it slightly at intervals, those muscles which it supplies, on the same side of the tongue, were convulsed. If the nerve was forcibly compressed, a slight gulp followed. When the nerve was divided, pinching the upper end of it was not followed by any muscular contractions.

6. *Experiments upon the Sympathetic Nerve.*—No experiments upon this nerve have hitherto exhibited any signs of sensation or muscular motion of any kind whatever. Its division is never followed by any visible effect.

Remarks.—By these observations some researches of other experimenters stand confirmed, whilst others are contradicted; the necessary consequence of discrepancies, often arising from the different modes of applying certain terms. Although the mysterious properties and actions of the nerves may never be completely unravelled, yet much has been effected by the successive and combined efforts of physiologists of different ages and contries.

The present investigation leads to the assumption, that one only of those nerves which derive their roots from the brain itself is, according to the definition laid down, a nerve of sensation. This is the larger and ganglionic division of the fifth nerve, whereby animals are enabled to examine by touch and to feel.

With regard to the other nerves subjected to experiment in this inquiry, none of them appear to possess in themselves any power to excite consciousness or feeling directly. Some of them are simply nerves of motion, and they transmit no other impressions but such as excite local musclar motion, limited to the muscles which they supply. Others, again, seem to possess a property of a different description from either of the two former kinds. One of these, the eighth for example, appears to be so intimately connected with the respiratory function as to be capable of influencing it in a most remarkable degree, without exhibiting any sign of sensation in itself, or of simple and direct muscular contraction.

It is a most remarkable fact, that when a nerve which influences respiration is divided, and the upper division is bruised or compressed for a few seconds, the same effects occur as when the irritation is applied to the entire nerve. This phænomena affords matter of curious and interesting speculation with regard to the relations which subsist between the nervous and the respiratory functions.

The farther pursuit of this inquiry may lead to some farther development of facts hitherto exposed in some instances to doubt and controversial discussion.

Dr. Hall was necessarily absent at one of the experiments, that on the ninth nerve; but he feels perfectly satisfied with the joint testimony of Mr. Field and Mr. Broughton.—*Fourth Report of British Association for the Advancement of Science.—Ibid.*

9. *Inquiries into the Varieties of Mechanism by which the Blood may be accelerated or retarded in the Arterial and Venous Systems of Mammalia.* By Dr. T. J. Aitkin—The attention of the Section was particularly directed to four modifications of arterial distribution, as indicated, (1.) by the angle at which a branch comes off from its trunk; (2.) the direction of the vessel; (3.) the subdivision; and (4.) the formation of plexus.

In illustration of the first, or angle of origin, Dr. Aitkin exhibited a preparation of the aorta of the tiger, in which the superior intercostals arose at an acute, the middle at a right, and the lower at an obtuse angle; from which he inferred that the force and velocity of the blood are rendered equal through the whole series. In speaking

of the direction of the vessels, he adverted to the tortuous entrance of the internal carotid and vertebral arteries into the skull in the human subject, and showed that it is still more remarkable in the horse, which in feeding requires to have the head for a considerable time in the dependent posture. But the best examples of the tortuous or serpentine course are to be seen in the spermatic arteries of the *Mammalia*. This mechanism, the author contends, adapts the circulation to the various positions in which organs may be placed, and to their states of action and repose. In speaking of the third modification, or the subdivision into numerous long branches, he particularly alluded to the observations of Sir A. Carlisle with respect to the arteries of the sloth, and showed that a similar ramification is found in the hedge-hog, both in the arteries of the panniculus carnosus and of the mesentery. Of the last modification, the plexus, he showed examples in the rete mirabile of Galen in the internal carotid, and of Hovius in the opthalmic artery, of the *Ruminantia*. He inferred that this structure prevents valvular turgescence, which would otherwise occur during the long period these animals keep their head in the dependent position while browsing. He also showed, that a rete mirabile exists in the opthalmic artery of the seal and goose, and considered it probable that in them it is conducive to the alternate adaptation of the eye to vision in air and water. He described the remarkable plexiform arrangement which exists in the mesenteric arteries and veins of the hog; and instituted a comparison between those vessels in carnivorous and herbivorous *Mammalia*, concluding that these modifications are in conformity with the transmission of blood through the liver, the rapidity of the peristaltic motion, and the power of nutrition.—*Fourth Report of British Association for the Advancement of Science.—Ibid.*

10. *Pathology of Apoplexy.* By WILLIAM STOKES, M. D.—The term apoplexy, as I suppose you all know, is derived from a Greek word, signifying a stroke or blow. It is a term which, in the present state of medicine, has been very frequently abused, or at least employed in very different senses, and hence the many erroneous opinions respecting it. The true meaning of the term expresses an alteration of the phenomena of the life of relation, that is, of the functions of the cerebro-spinal system. In taking a view of the nature of this alteration, we find that the attack generally comes on in a sudden manner, and that the functions of the brain are partially, or completely suspended. You are aware that the manifest phenomena of the life of relation are those which belong to *sensation*, *muscular motion*, and *the intellect*, and that the system of the life of relation is composed of the brain, spinal cord, and nerves. Now suppose, for example, that a man gets an attack of apoplexy, we find him paralytic—here is a lesion of the muscular function. We find him insensible to external stimulants, he feels no pain—here is a lesion of sensation. We may find his sight, hearing, taste, smell, and touch are injured. He lies in a state of insensibility, and is unconscious of every thing passing around him—here we have an example of interruption in the performance of the intellectual functions. All these phenomena exhibit the various lesions superinduced by an attack of apoplexy in the functions of those organs which subserve to the life of relation.

I have said that the term apoplexy is frequently abused in modern medicine. From the circumstance of most cases being accompanied by an effusion of blood on the surface, or into the substance of the brain, the term has been also applied to sanguineous effusions into other organs, and we hear every day of pulmonary and hepatic apoplexy; terms implying the extravasation of blood into the substance of the lung or liver. The analogy, however, in such cases will on examination he found to be coarse, and the application of the term loose and improper. Apoplexy, as a cerebral disease, may occur with or without effusion; in either case the disease, *quoad* the lesion of function, is the same; but to give the name of apoplexy to hæmorrhage into the lungs or liver is improper. The term apoplexy should be used only with reference to the brain, and applied to a particular train of lesions in the functions of the life of relation occuring *with or without an effusion of blood, or even congestion*. When we have effusions of blood into other viscera, we may have them unaccompanied by any apparent lesion in the functions of the organ affected, (a circumstance rarely met with in the case of the brain,) and it would be much better to give some other name to those hæmorrhages into the substance of the liver and lungs, than to designate them by one drawn from a loose and imperfect analogy.

The suspension of the phenomena of the life of relation, complete or partail, which constitutes apoplexy, may be connected with any of the following pathological conditions. First, great congestion of the brain, in which the vascular system of that organ is overloaded, but without extravasation of blood or serum; this is termed *the congestive apoplexy*. In the next place, we may have this congested state of the vessels of the brain with an extravasation of blood on its surface. To the latter form the *meningeal apoplexy* has been applied. Thirdly, with an effusion of blood into the substance of the brain, which is the most common case; and, lastly, we may have complete apoplexy, without morbid appearance, or, if there be such, *quite insufficient to account for the phenomena*. A man will fall down suddenly, he will lie in a state of insensibility, with stertorous breathing, coma, and paralysis, he will die with all the symptoms of the worst form of apoplexy, and yet on dissection the brain may be found *to all appearance healthy*. This is what has been termed by the older authors the nervous or convulsive apoplexy, of the real nature of which we are still as ignorant as we are of the nature of tetanus, hydrophobia, and other nervous diseases unaccompanied by perceptible organic change.

This is the *simple apoplexy* of Dr. Abercrombie, of which he gives several most important cases, and refers to others related by the older authors. You will at once admit that it is not more extraordinary that apoplexy should exist without perceptible organic change than mania, tetanus, hydrophobia, and other affections. Of the fact there is no doubt. Such cases indeed are rare, which in one sense may be looked on as a fortunate circumstance. But in the progress of other diseases, this nervous coma or apoplexy is by no means uncommon. Thus there is no symptom more common than coma in typhus, and yet if you examine the head after death, you generally either find no lesion at all, or such as will not be sufficient to account for the symptoms. The coma, which occurs in cases of painters'

colic too, appears to be closely connected with this nervous apoplexy. You will recollect an interesting clinical experiment I made in the case of a patient with painters' colic who had profound coma. In this case I thought it probable that the condition of the brain bore no resemblance to sanguineous apoplexy, because the symptoms of painters' colic are seldom or never accompanied by hyperæmia of the nervous or other systems. Under this impression, I prescribed a full opiate, and this not only did not increase the coma, but, on the contrary, produced the very best effect, for the patient was amazingly improved the next morning. I do not so much mean to say, that opium is useful in nervous coma, as that in this instance, at least, the coma was not of the congestive kind. It is not unlikely, too, that the coma of jaundice is of the same description and unconnected with any decided hyperæmia of the brain. I am aware that in jaundice the coma is supposed by some to depend upon a bilious condition of the blood circulating in the brain, but there are so many cases of persons who have laboured under jaundice for years without having coma, that we must seek for some other explanation. Now, so far as we know of the encephalon in persons who have died of jaundice, it appears that little or no congestion exists, and hence it seems probable that the coma of jaundice is similar to that of nervous apoplexy.

I shall now proceed to the consideration of those forms of apoplexy which are connected with changes more or less apparent in the circulation of the head, and with which we are consequently better acquainted. I have told you that simple congestion of the brain may be accompanied by symptoms of apoplexy, or that we may have the disease presenting in addition to this an effusion of blood into the substance, or on the surface of the brain. The simplest idea you can get of the condition of the brain in the congestive form, is to consider what its state is in persons who have been hanged. These persons have the vessels of the brain loaded with blood from the violent interruption of the venous circulation. Now, this increase in the quantity of blood circulating in the brain may arise from two causes, one depending on the interruption of the venous circulation, the other produced by an increased action of the arterial system. Hence in certain cases of disease of the heart, where the blood is sent with great force to the head, there is a strong predisposition to apoplectic attacks. The kind of disease of the heart, however, which has been found most liable to produce this, is not, as you would suppose, Corvisart's active aneurism, but simple hypertrophy of the heart, where the cavity of the left ventricle continuing the same, its walls are increased in thickness and strength, so that on the natural quantity of fluid an increased impulse is exercised. Such at least is the result of Andral's researches, and there is every reason to place confidence in the accuracy of his conclusion.

About this congestive apoplexy there appears to have been a good deal of misapprehension. You have all heard of *the serous apoplexy*. In this form it has been supposed that the cause of the compression of the brain and all the other symptoms is an effusion of serum into the cavity of the pleura, which will produce compression of the lungs and dyspnœa. The idea which has been generally entertained is, that the effusion of serum is the cause of *all* the symptoms, and, in consequence, the same active treatment has not been adopted as in the

other forms of apoplexy. This opinion will be best refuted by the investigations of Dr. Abercrombie, and I cannot do better than read for you the opinions of this eminent writer on the subject, as given in his celebrated and admirable work, which I have no hesitation in saying constitutes one of the brightest ornaments of British medicine.

"The distinction, which has been proposed betwixt sanguineous and serous apoplexy, is not supported by observation. The former is said to be distinguished by flushing of the countenance and strong pulse, and by occurring to persons in the vigor of life; the latter by paleness of the countenance and weakness of the pulse, and by affecting the aged and infirm; and much importance has been attached to this distinction, upon the ground that the practice which is proper and necessary in the one case would be improper or injurious in the other. I submit that this distinction is not founded upon observation, for, in point of fact, it will be found that many of the cases, which terminate by serous effusion, exhibit in their early stages all the symptoms which have been assigned to the sanguineous apoplexy, while many of the cases, which are accompanied by paleness of the countenance and feebleness of the pulse, will be found to be purely sanguineous; and one modification of the disease in particular will be described, in which these symptoms are very strikingly exhibited, while the disease is found to be sanguineous apoplexy in its most hopeless form.

"Portal has described a series of cases which afford the same result; of three, which presented all the symptoms of serous apoplexy, one was saved by repeated bleeding, and in the other two, which were fatal, there was found extensive extravasation of blood. Case XCVI., lately described, forms a remarkable addition to these observations. If any case could be confidently considered as serous apoplexy, this was such. Dropsical effusion had existed in the body for months, and in defiance of every remedy it had been progressively gaining ground. There were symptoms indicating its existence, both in the thorax and in the abdomen; the patient then became comatose with pale countenance, and died; but though dropsy was found in the other cavities, none could be detected in the brain.

"In other parts of the body serous effusion is very seldom a primary disease; it arises as a result either of inflammatory action, or of impeded circulation, and takes place slowly, not accumulating at once in such quantity as to induce urgent symptoms. It is therefore in the highest degree improbable, that it should occur in the brain as a primary disease, and accumulate with such rapidity as to produce the symptoms of an apoplectic attack.

"The quantity of fluid effused bears no proportion to the degree of the apoplectic symptoms. We find it in small quantity, though the apoplectic symptoms had been strongly marked and long continued; we find it in large quantity when the symptoms have been slight; and finally, we find most extensive effusion in the brain where there have been no apoplectic symptoms at all. The direct inference from these facts is, that, in the cases of apoplexy with effusion, the presence of the fluid cannot be considered as the cause of the apoplectic symptoms."

The same error has been committed with respect to hydrothorax, a disease almost never primary, but the result of either pleuritic inflammation, obstruction of the heart or lungs, or some analogous

cause. The cause of the symptoms is not the mere effusion of fluid, but some preexisting disease which has given rise to a serous effusion. In Dr. Abercrombie's work you will find the remarkable fact stated, that there may be a copious effusion of serum in the head without producing apoplectic symptoms. The following case, mentioned by Dr. Abercrombie, furnishes a remarkable illustration:—A patient, who had labored under hypochondriasis for upwards of thirty years, began to decline rapidly in health. He was extremely feeble, his bowels costive, his sleep disturbed, and his appetite gone. This state continued for some time, and he began to sink, but he never complained of head-ache, giddiness, convulsions, or paralysis, and his mental powers remained unimpaired until a very short time before death. Yet, on opening the head, there was an exceedingly copious effusion of serum found under the arachnoid, and in some places this was so great as to give the arachnoid the appearance of small bladders filled with water. The ventricles were distended with fluid. Dr. Abercrombie gives another case, where the quantity amounted to eight ounces, and notices a case, mentioned by Dr. Marshall, of a maniac who died of mortification of the feet; a few hours before death he became perfectly rational, yet effusion was found both on the surface of the brain and in the ventricles, amounting to more than a pound.

All these facts go to prove, that what has been termed serous apoplexy is only an apoplectic attack depending on congestion of the brain, that in some cases we may have this congestion accompanied by serous effusion, in others not; that the effusion is secondary and by no means of constant occurrence, and that altering our practice and pursuing a less active plan of treatment in such cases would be improper. The same treatment should be adopted in the serous as in the congestive form of the disease, for where the nature of the affection is the same, the same curative means should be employed. Why it is that effusion takes place in one case and not in another we cannot tell: such changes are connected with laws of organization, of which we are at present ignorant. We know as little why this should occur as why inflammation of the liver in one case is followed by enlargement, in another by the secretion of pus, in a third by cancer, or in a fourth by hydatids.

We now come to the consideration of apoplexy with extravasation of blood. This is the form of the disease to which the term apoplexy has been restricted by one of the last writers on the subject, M. Rochoux. In this affection the extravasation of blood, which constitutes the principal pathological feature of the disease, is found to exhibit a remarkable variety as to its seat and extent. In some cases the blood is effused on the surface of the brain, in others into its substance, and in a few cases into the ventricles. De Haen gives some cases of apoplexy produced by rupture of the choroid plexus, but in the great majority of cases, where blood is found in the ventricles, the extravasation has taken place in one hemisphere, and, tearing through the substance of the brain, has made its way into their cavities. Of the three varieties of apoplectic effusions, the ventricular is the rarest; the next to this is the meningeal, or that in which the blood is poured out on the surface of the brain. and the most common is where it is effused into the substance. It has been also found

that certain parts of the brain are much more liable to sanguineous effusions than others; of the reason of this, as of many other phenomena connected with the circulation of the brain, we are still in ignorance. The following table, which you should bear in mind, exhibits remarkable preponderance in the liability to sanguineous effusions of certain parts of the brain. It has been taken from the Precis d'Anatomie Pathologique of Andral. The following is a summary of the results of 386 cases of apoplexy.

In 202 cases, the effusion took place into the substance of the hemispheres of the brain, in that part which on a level with the corpora striata and optic thalami. The portions of the brain next most liable to effusions are the corpora striata; and here we have 61 cases. Next to this are the optic thalami, in which we have 35 cases. In that portion of the hemispheres above the centrum ovale, 27 cases. Lateral lobes of the cerebellum, a proportion of 16 cases. In those portions of the brain anterior to the corpus striatum, 10 cases. In the mesocephalon, 9. Spinal cord, 8. Posterior lobes of the brain, 7. Middle lobe of the cerebellum, 5. Peduncles of the brain, 3. Olivary bodies, peduncles of the cerebellum, and pituitary gland, 1 in each, making 3.—Total 386. Out of these, we find 325 cases occurring in the hemispheres of the brain, corpus striatum, and optic thalamus.

In the number and size of these effusions we find the greatest varieties. In some cases an enormous effusion takes place, and many ounces are extravasated into the substance of the brain; in others, the quantity is trifling, being sometimes as small as a pea, or even less. It has been observed that in cases where numerous extravasations were discovered, they were generally found to be in different states, as if they had occurred at intervals, and not simultaneously. This leads us to the knowledge of one of the most important facts in pathology, that in many cases of apoplexy, after a clot has been formed, nature commences at an early period a process of cure. The change, which takes place in cases where a patient recovers, seems to be the following:—It becomes at first somewhat gelatinous, it is next observed to be more consistent, and it loses its red color, and takes on a whitish or yellow appearance. The clot is gradually removed, and along with the absorption of the clot there is a process of isolation going on. A fine membranous cyst, furnished with vessels, is formed round the clot. In some cases the clot is replaced by a quantity of serous or gelatinous fluid; but in the majority of instances this does not occur, and the cyst has been found empty. This is a fact which has been established by numerous observations.

There is the greatest possible difference as to the period at which the absorption of the clot is completed; but we may safely assert, from the number of cases in which, after paralysis, a recovery takes place, that this process is of very common occurrence. In several cases, where apoplexy followed by paralysis has happened several times during the lifetime of the patient, a number of those cysts, corresponding with the number of attacks, and presenting various appearances according to the date of their formation, have been found. It appears then that the cure of apoplexy depends solely on the absorption of the clot; and that, as long as this remains unabsorbed, the patient is in danger. In some cases absorption does not take place at all, the clot becomes organized; and in this way it is sup-

posed that some of the tumours found in the brain are formed. There are several circumstances which favor the absorption of the clot, but nothing so powerfully as a healthy condition of the whole cerebral circulation. This leads us to the consideration of the importance of paying attention to the head long after an attack of apoplexy. It inculcates the necessity of avoiding every thing calculated to add to the existing congestion, and shows that, in the paralytic or after-stage of an apoplectic attack, we should not neglect to deplete the head from time to time. The great point is to keep the head perfectly free from irritation; for it has been found, that, where a cure appeared to be going on, any new irritation applied to the brain has had the effect of arresting the absorption of the clot, and marring the process of cure.—*London Medical and Surgical Journal, July 26th*, 1834.—*Ibid.*

11. *Circumstances which predispose to Apoplexy.* By William Stokes, M. D.—Apoplexy with sanguineous effusion may occur at any period of life: it is not uncommon even in persons of tender years. Billiard details an instance of this in a child soon after birth. There are also several cases mentioned as occurring in children during the first three or four years. Andral gives the case of a boy of nine years of age, who died of apoplexy, with a vast effusion of blood. One of the most remarkable cases of this kind I ever witnessed, occurred in a child who had just been weaned. This child had been laboring for some time under symptoms resembling hydrocephalus, and then suddenly got an attack of convulsions, followed by coma and paralysis of one side. From a careful study of the symptoms, I ventured to make the diagnosis of apoplectic effusion, and on examining the brain after death, there were nearly three ounces of blood found effused in the base of the brain. But though apoplexy may occur at any poriod of life, there is a greater liability to it at a particular period. Rochoux has shown that the age at which there is this greatest liability, is towards sixty, and diminishes towards seventy. The number of cases which occur between sixty and seventy are very great, when compared with those between seventy and eighty; and after eighty he considers the liability to be still farther diminished. It seems strange, that persons after seventy should not be so liable to attacks of apoplexy as before that period, but such is the fact. It has been thought that this may be explained by the anemic state of the brain in old persons; it is said, that at such an advanced age general emaciation takes place, and the quantity of blood is greatly diminished. This explanation, however, is doubtful, because it is at present well ascertained, that persons of ordinary development, who are neither fat nor thin, and also persons of spare and delicate habit, are as much, and even more, liable to apoplexy than the fat and plethoric. It has been ascertained by careful investigations, that a high degree of plethora does not necessarily predispose to the disease, and that it is oftener met with in persons not of a plethoric habit than in those who are. These considerations throw some doubt on the opinion that an exemption from apoplectic attacks is connected with an anemic condition of the system. It generally happens, however, that at this advanced period of life, from the general debility of the system, and the incapacity for

active exertion, a man ceases to employ his thoughts about business, and there is little exercise for the intellectual functions. We now have finished the task; the brain reposes from the turmoil of active and incessent thought; there is a comparative absence of mental exertion, and this may in some degree account for the rarity of apoplexy after the age of seventy.

With respect to the different temperaments as bearing on this point, Rochoux shows that in Paris, at least, there was a nearly equal frequency of the disease in individuals of the sanguine, sanguineo-bilious, and sanguineo-lymphatic constitutions. The bilious temperaments, however, are much less liable. Such is the result of the observations in Paris; but it must be recollected, as Rochoux observes, that in that city the bilious temperament is the rarest. With respect to the sanguine or plethoric, it has been found that this temperament does not predispose to apoplexy so much as has been generally supposed. The disease has been observed to be most common in persons of ordinary development, next to those in persons of thin, spare habit, *and last of all, in the plethoric and fat.* Rochoux's researches lead him to conclude that the number of persons of ordinary development, attacked by apoplexy, is three times that of the plethoric, and that that of the spare habit is little more than twice as great as that of the fat and plethoric. If these researches are correct, they afford great consolation to stout gentlemen.

The conclusion, which has been come to, with respect to temperaments as bearing on the liability to apoplexy, appears to be true; namely, that there is no sign appreciable by the senses which will unequivocally point out a predisposition to apoplexy. This is of great importance in a practical point of view. You may expect the disease in the fair or dark haired, the thin or fat, alike. The frequent occurrence of this disease in persons who were never suspected to have any predisposition to it is another proof in favor of this opinion.—*Ibid., August 2d,* 1834.—*Ibid.*

12. *Diagnosis of Apoplexy.* By William Stokes, M. D.—With respect to the mere medical diagnosis of apoplectic effusion, it would be well if, in making it, you would always bear in mind the anatomical characters of the disease. Extravasation of blood into the substance of the brain generally takes place by a tearing or separating of the cerebral tissue. A quantity of blood is rapidly effused, the substance of the brain torn, and a cavity formed. There can be no doubt that the tissue of the brain is torn, for we can see the loose shreds hanging on each side of the cavity, and mixed up with the clot. Now, what are the principles which should guide us in making our diagnosis? They are exactly the same as those in other diseases *connected with a sudden solution of continuity in the substance of internal organs.* We have, with or without any preceding symptoms of a different kind, the *sudden* supervention of new and remarkable phenomena. The phenomena which are the result of disease proceeding in its ordinary course are gradual and progressive; but occurrences of this kind are almost always characterized by sudden and well-defined symptoms. Thus, we make the diagnosis of the rupture of an aneurism of the aorta from the sudden vomiting or expectoration of blood, followed by the death of the patient. Here, you perceive, the diagnosis is founded

on the *sudden* supervention of new symptoms. In the same way we may make the diagnosis of pneumothorax with a fistulous opening communicating with the bronchial tubes, and calculate from the sudden occurrence of pain in the side and the other signs of pneumothorax, that there has been a solution of continuity in the pleura. Again; if a person, laboring under hepatic abscess, is seized with a fit of coughing, and suddenly expectorates a quantity of pus, and that this is found to be accompanied by a subsidence of the tumour in the region af the liver, we make the diagnosis of perforation of the diaphragm and pleura, and the escape of the contents of the abscess into the substance of the lung. Or he may, under the same circumstances, be seized with sudden and rapid peritonitis, and here we make the diagnosis of an effusion into the peritoneum. It is on precisely the same principles that Louis has established the diagnosis of perforation of the small intestines in cases of gastro-enteritis. The patient is lying in bed, perhaps apparently improving; he is not exposed to any exciting cause, and every care may have been taken of him. *On a sudden* he exhibits symptoms of intense peritonitis, and rapidly dies. Any one conversant with such cases can easily make a correct diagnosis. On the same principles we found the diagnosis of apoplectic effusion. Almost all the instances of disease which I have given occur with a *sudden* violent invasion; and the same thing may be said of apoplexy with extravasation. It is true, that there are some cases which do not exhibit this character, but the general rule is suddenness of attack.

We may divide apoplectic attacks accompanied by extravasation into three great classes, and, if you look to the great majority of cases of this disease, you will find that, although they appear to pass by insensible degrees into one another, still, when taken and examined singly, there will be found a difference between them. This classification is that of Rostan, and I have known his principles verified in many instances. In the first class of cases, which are the worst and generally prove fatal, the extravasation is enormous. A person, apparently in perfect health, will fall down in a fit of apoplexy, remain for a short time insensible and paralytic, and then die. In such a case as this, the ordinary pathological character is an enormous effusion of blood, or excessive congestion. In a case of the second class, we have an apoplectic seizure with coma, which disappears after some time, and the patient recovers his intelligence, *but with paralysis of one side.* The pathological character of this form is, that the effusion is more limited, and exists only on one side of the brain. Neither is the congestion so severe, and the patient recovers from the coma. In the third form, we have an attack of apoplexy of a milder description; there is scarcely any coma or loss of intelligence, and the paralysis is slight, generally affecting the muscles of one side of the face, or of one of the extremities. Let us repeat these varieties. In the first, which constitutes the *apoplexie foudroyante* of the French, there is an enormous extravasation of blood in both sides of the brain; or, if it be only on one side, the amount of the effusion is frequently such as to burst through the walls of the ventricles and get into their cavities, and in this way we may have an effusion of one side getting into the other hemisphere, or exercising such pressure on it as may give rise to *general* symptoms.

Such a case as this is, I believe, generally fatal; its progress, too, is very rapid, several persons under such circumstances having died in the space of an hour, or less. In the second form, there is coma and loss of intelligence, and the patient recovers *with paralysis of one side*. Here the extravasation is never so great as in the foregoing case; the effused blood is confined to one side, and does not get into the ventricles. In the third form, the effusion is very much circumscribed, the signs of general congestion or extravasation are slight, the quantity of blood poured out is not, perhaps, larger than a nut, it is followed by partial paralysis, and there is little or no coma or loss of intelligence.

Let us take a brief review of the symptoms which attend each of these forms. In a case of the first description, we find a person, hitherto in the enjoyment of health, suddenly attacked with symptoms of intense apoplexy. You will recollect that in my last lecture I told you that apoplexy consisted in various lesions of the phenomena of the life of relation. In the most violent form of apoplexy, many authors are of opinion that there is a total paralysis in the functions of animal life. The patient falls down and remains in a state of complete insensibility, the eye no longer obeys the stimulus of light, no sound makes any impression on the ear, or odor on the sense of smelling, the sense of taste is destroyed, the skin may be now seared with a red hot iron without the slightest indication of suffering; in fact, sensation, one of the great phenomena of animal life, appears to be annihilated. If we examine farther, we find that there is a total suspension of the intellectual functions, and that the patient is unconscious of any thing passing around him. If we go to the muscular system, we find that all that part of it which subserves to the purposes of animal life is completely paralyzed. The neck, trunk, and extremities have lost their power; and, if you raise the head, trunk, or one of the limbs, they fall down like dead masses as soon as the support is withdrawn. In some cases there is a certain degree of rigidity in the muscular system, in others not. We may observe, also, that from the paralysis of the buccinators, the cheeks are alternately puffed out and sucked in during respiration. As far as my experience goes, I believe that this symptom is fatal. Here, then, we see that the great phenomena of the life of relation are suspended. The functions of organic life, however, still continue to be performed, the heart beats, respiration goes on, and the power of secretion remains; but, after some time, the functions of organic life are also suspended, and the patient dies. In some of these cases, we observe evident signs of determination of blood to the head, the face is swollen, and the lips livid; there is considerable turgescence of the vessels of the neck, with heat of the head, the skin hot, and the pulse full and strong. In other cases, however, we have a feeble pulse and a cold collapsed state of the surface,

Let us now turn for a moment to the pathology of this form of the disease. I have already mentioned, that the extravasation sometimes occupies both hemispheres of the brain, or that it occurs on one side, by tearing through the substance of the brain, gets into the ventricles, and produces symptoms referable to a lesion of both sides. With respect to the simultaneous double effusion, the following is a short notice of some cases taken from the Clinique Medicale of M.

Andral. A man, about 37 years of age, fell down near La Charite in a fit of apoplexy. He was immediately brought into the hospital, had prompt and careful attention paid to him, but without any effect; he lay in a state of profound coma, with complete suspension of the phenomena of animal life, and died in an hour and a half. On examination there was a double effusion of blood found in the brain, but it had not got into the ventricles. In another case, marked by simple intensity, there was an enormous effusion discovered in the substance of one hemisphere, which burst into the ventricle, tore through the septum lucidum, and passed into the ventricle of the opposite side. In the next case, no distinct trace of optic thalamus or corpus striatum could be seen, their substance being completely broken up and destroyed by the effusion. I have told you that, after a rupture of the substance of the brain and the escape of the effused blood into the ventricles, persons have not recovered, but it is a fact, and a consolatory one indeed, that a person may recover from a *simultaneons double effusion*. A case in proof of this is given by Andral. A female, who had been for some time a patient at La Charite, died of cancer of the stomach. The history of her case was, that nine years before she had an attack of apoplexy. had fallen down in a state of insensibility, and remained comatose for a considerable time, that this was followed by *paralysis of both sides of the body*, which continued for two years, after which she gradually recovered the use of her limbs. In this case, two serous cysts, such as are met with in cases where patients have recovered from apoplectic attacks, were found, one in each hemisphere of the brain. In another case, the subject of which died of visceral disease, the patient had twenty-two years before an attack of apoplexy with double paralysis, and recovered with the loss of the use of one side; here there were two cysts also found. It appears, then, though extravasation, with rupture of the walls of the ventricles, and escape of blood into their cavities, always proves fatal, a recovery may take place after a simultaneous double effusion.

Let us now inquire briefly, whether an apoplectic attack, followed by paralysis of both sides of the body, gives sufficient grounds to enable us to make the diagnosis of either of these accidents. Does it follow, if a person has an attack of apoplexy, succeeded by paralysis of both sides, that the effused blood has burst into the ventricles, or that a simultaneous double effusion has occured? Andral inclines to this opinion as far as I can collect. Dr. Abercrombie appears to differ from him, and gives cases in illustration of his opinions. The following is one:—A private of the 10th Hussars had been complaining for some time of a pain in the head, for which he was blistered, and the pain soon went off. On the 22d of July, 1819, he was seized with giddiness and fell down; on being raised, he vomited, and complained of violent head-ache and faintness, but was quite sensible. He was very pale, and his pulse slow and languid. He was brought into Hospital, where he asked for some cold water, made a few inspirations, and expired. From the moment of his last seizure he had been paralytic of both extremities. Here we have an attack resembling the first form of apoplexy, so far as complete loss of power in the upper and lower extremities is concerned; but observe, the *patient was not comatose and retained his faculties to the last.* On

examination there was nothing found amiss with the brain, but, on removing the cerebellum, a coagulum to the amount of about two ounces was found under and surrounding the foramen magnum. Here the paralysis appears to have been produced by the pressure of the effused blood on the upper part of the spinal cord. This case is an interesting one. It appears that the injury done to the functions of the life of relation was partial, there was a lesion of the muscular function, but there was no coma, and the intellectual faculties were unimpaired. As far then as a single case goes, we may come to the conclusion, that we are not to make the diagnosis of the first form of apoplexy, unless, in addition to the double paralysis, there are coma and loss of intelligence and sensation. The great points of diagnosis are coma, suspension of the phenomena of the mind, and paralysis of both sides of the body, both of motion and sensation. We now come to consider the symptoms of the second or milder form of the disease. A person falls down in a state of insensibility, but, when you come to examine him, you find that the coma is not so profound, nor is the paralysis and loss of sensation so complete. The eyes are to a certain degree susceptible of the impressions of light, signs of uneasiness are exhibited when strong pungent odors are applied to the nostrils, and indications of suffering are given if you pinch or burn the skin. All these circumstances prove, that the paralysis of sensation is by no means so complete in this as in the former case. You observe here, too, that instead of the cheeks being puffed out in the manner before described, there is only a partial paralysis of the muscles of the face, *and the mouth is drawn towards the sound side*. The patient, too, instead of dying in a comatose state, gradually regains his intelligence, and is only paralyzed on one side, or one extremity. All these circumstances point out that the injury done to the brain is not so extensive, and the occurrence of paralysis on one side shows that the effusion is limited to a single hemisphere of the brain. All this, too, is borne out by pathological anatomy, which shows us, in the first place, that the effusion is much less, that it exists only on one side of the brain, and never bursts into the ventricles. The general congestion of the head also is much less than in the former case. In the third form, the congestion and other symptoms are sometimes very slight. A person in health may feel a stunning sensation in the head, followed by some thickness of speech and drawing of the mouth to one side, or slight paralysis of one arm or hand, but he has no coma or loss of intelligence, and the paralysis quickly disappears. Every thing connected with the attack shows that it is very slight, the effusion is extremely limited, and this is confirmed by pathological anatomy.

I have now given you a brief sketch of the three varieties of apoplexy, between these you will meet with many intermediate cases.

Let us inquire how far does the circumstance of paralysis point out the occurrence of an extravasation of blood into the substance, or on the surface of the brain; that is, how far we can say that this patient has effusion, because he has become suddenly paralytic. It would appear, that the mere suddenness of the attack will not alone lead to the formation of a certain and accurate diagnosis. You will find in various authors many instances of affections of the head, not of an apoplectic character, in which there was sudden paralysis.

Thus, for instance, there are many cases of tumours and encysted abscesses on record in which there was sudden paralysis, and where, if you should pronounce the disease to be apoplexy, you would be certainly wrong. We had lately at the Meath Hospital, a remarkable instance of this. A patient, who had been for a considerable time laboring under aneurism of the innominata, in the course of the night became suddenly hemiplegic. On examining the brain post mortem, there was a circumscribed abscess found in one of the hemispheres, but no sanguineous effusion. If you look to the works of Abercrombie, Rostan, Lallemand, etc., you will find many cases detailed in which sudden paralysis occurred from other causes than apoplexy.

But are there no circumstances, which, combined with the suddenness of the attack, would lead us to form the diagnosis of apoplexy? Now it would appear that, as a diagnostic of apoplectic effusion, *suddenness of paralysis* is only to be relied on where there have been no premonitory symptoms of a local disease of the brain. In the great majority of cases of cerebral abscess, you will find that pains and cramps in some of the limbs, and pain of the head in the situation of the abscess, have preceded for some time the paralytic attack. But if a person in health, without any of these cramps or pains, gets a *sudden* attack of apoplexy, and becomes hemiplegic, you may make the diagnosis of apoplectic effusion with tolerable certainty. The fact of the paralysis, occurring with an apoplectic seizure, renders it highly probable that the case is really one of the hæmorrhagic diseases of the brain. On the other hand, it is true that we may have apoplectic effusions ushered in by symptoms of irritation of the brain; as in the case of an apoblectic effusion occurring in the centre of a softening of the brain. The abscence, therefore, of these premonitory symptoms appears to be necessary towards forming the diagnosis of simple appoplectic effusion.

In cases where absorption of the clot takes place, we cannot suppose that any inflammatory condition of the brain exists; on the contrary, we have every reason to believe that a non-inflammatory condition of the brain is highly favourable to this process, for whenever any thing of an opposite character happens, we find that it prevents absorption. But sometimes cases occur, in which, at an earlier or later period, inflammation is set up round the clot. Now, what happens in many of these cases? Here let me repeat, that there are many exceptions to the rules given for forming the diagnosis of diseases of the brain; the variety in the symptoms of cerebral affections being so great, that it is sometimes difficult to deduce from them rules of general application. In most cases we have apoplexy followed by paralysis with resolution; but, in cases where inflammation takes place round the clot, it has been observed that the paralyzed limb which had been previously in a state of resolution becomes contracted, and then we have paralysis with contraction. This contraction generally comes on in a gradual manner, but, when the case is severe, it is frequently ushered in by violent spasmodic action of the affected limbs. We have, then, the following order of phenomena: first, paralysis with resolution, and then paralysis with contraction. In circumscribed inflammation of the brain, the phenomena are the reverse of these; we have first rigidity and contraction of the limbs,

and then symptoms of apoplexy followed by paralysis with resolution. —*Ibid.*—*Ibid.*

13. *Treatment of Apoplexy.* By William Stokes, M. D.—I shall endeavor to get through the treatment of apoplexy as briefly as the important nature of the subject will admit. I shall commence by saying, in the words of Dr. Abercrombie, that the remedies for apoplexy are few and simple. The great point is to relieve the head from the accumulation of blood, to prevent farther congestion, and to obviate inflammatory action; and for these purposes the only efficient means we possess is bleeding. There is no disease in which the efficacy of free and bold depletion by the lancent is more remarkable than in apoplexy. I agree complely with Dr. Abercrombie in thinking that the symptoms which denote serous apoplexy by no means contra-indicate the use of the lancet; for I have already shown, that serous apoplexy was nothing but congestion, that the serous effusion was one of the consequences of this congestion, and by no means the cause of the apoplectic symptoms. Dr. Abercrombie thinks that, in the commencement of the disease you may bleed where the pulse is feeble as well as where it is strong and full, and gives many important cases in which the disease yielded to a copious abstraction of blood, though the state of the patient's pulse and general system at the time were such as would deter many from bleeding. He gives three cases of persons about seventy years of age, on whom this mode of treatment was practised with success, and another of a person of spare habit, aged eighty years, whose life was saved by a bold and timely use of the lancet. There is also another case detailed of a patient who was worn down and dropsical at the time of the attack, and received considerable relief from bleeding. I do not wish you to conclude from this, that you should bleed as boldly in the one case as in another; what I wish to impress on you is this, that in the vast majority of cases it is advisable to have recourse to the lancet. With respect to the first bleeding, I think that where the pulse is full and strong it should be large, and such as will produce some effect on the symptoms. This may be repeated afterwards to a smaller amount if necessary; but the subsequent bleedings should be rather local than general, except where there is any renewal of the cerebral and circulatory excitement, which must be always met with activity. I believe the cases in which you must make the largest bleedings are those in which there are symptoms of an hypertrophied heart. But where this is not present, one or two bold bleedings, followed by local depletion of the head, will be sufficient. In cases of apoplexy, you may either open a vein or the temporal artery, for the objections made to arteriotomy in phrenitis do not apply so much to cases of apoplexy. There is no violence on the part of the patient, nor is there the same chance of the vessel giving way. The head should be shaved and freely leeched, and the patient may be cupped on the temples or the back of the neck.

Next in efficacy to general and local bleeding seems to be the administration of strong purgatives. There are many cases on record, in which the coma and other symptoms have resisted bleeding, both general and local, but have disappeared under the influence of active purgation. One of the great objects in the treatment of apoplexy should be to get rid of the coma as soon as possible; and for this purpose nothing appears to answer better than the early use of brisk purgatives. Dr. Abercrom-

ble recommends croton oil as the best purgative that can be employed, and indeed it is an excellent one; but if the patient can swallow, you need not be very anxious about the kind of purgative you prescribe; any active purgative followed by a strong enema will do. Where the patient cannot swallow, you may mix the dose of croton oil with some mucilage, and pass it into the œsophagus by means of a gum elastic tube.

After purgation, the next thing is to apply cold to the head by means of cold lotions, or iced water, or by pouring a stream of cold water on the head. This is a measure of great efficacy, and one which you may employ with safety and advantage.

In cases of apoplexy, where the coma had resisted free bleeding, both general and local, and where purgation and cold applications to the head have been employed without any decided effect, it seems avisable to apply a blister to the head or nape of the neck. You will recollect that I told you that blisters were always dangerous in the early periods of all acute visceral inflammations. This, however, does not apply so much to cases of hæmorrhagic effusion like apoplexy, in which blisters may be employed at an earlier period than in cases of active inflammation. I would advise you, therefore, to use blisters in cases of apoplexy attended by persistent coma, having first put into practice the means already mentioned.

Many persons advise the use of emetics in apoplexy, but the facts bearing on this point, to which I have drawn your attention when speaking of inflammation of the brain, will also apply here. You may take it as a general rule, that where congestion of the head exists, vomiting will always increase it, and must be, therefore, exceedingly dangerous. As far as theory goes it is totally against this practice, and I believe experience also is opposed to it. In a number of cases of disease of the brain, where emetics were employed, it has been found that an unfavorable result had ensued, and there are some cases of apoplexy on record in which the exciting cause was a fit of vomiting.

Suppose that, after having taken away blood, purged actively, used cold applications, and blistered the head, the coma still remains, accompanied by a feeble pulse and cold skin, what are you to do? I believe, under these circumstances and these alone, you may venture on the use of internal stimulants. Though this is at best but a forlorn hope, still the practice appears rational; we have analogy to guide us in the use of stimulants in such cases, and there are cases on record of persons who have recovered from this state by their judicious employment. The remedies most generally prescribed for this purpose are camphor, musk, and carbonate of ammonia. In the cases of typhus we know that these remedies have frequently succeeded in removing the coma; but I repeat that you should never have recourse to stimulants until the period for depletion has passed by, and all the ordinary means have failed.

I shall now suppose that we have succeeded in removing the coma, that consciousness has returned, and that nothing remains but paralysis of one side. Our great object is to get rid of the paralysis as soon as possible. Here you will recollect that you have to deal with paralysis depending upon extravasation, a paralysis which, as far as we know, will not disappear under any form of treatment until the extravasated blood has been absorbed. The first thing then you have to do, is to adopt measures to prevent a return of the attack. This is to be ef-

ected by carefullyrestricting the patient in his diet, by avoiding all causes of cerebral irritation, whether physical or moral, and by obviating every thing capable of exciting the circulation. But you should not be content with this; you should, from time to time, employ local depletion, which in cases of this kind has a double utility. It tends to prevent a repetition of the attack, and, by lowering the circulation, keeps the brain in that non-inflammatory condition, which is most favourable towards promoting the absorption of the coagulum. In many cases, also, you will find it of great advantage to establish a drain in the vicinity of the disease, and a great deal of good may be done by putting a seton, or an issue, in the neck. You must also pay constant attention to the state of the bowels and urinary system in cases of paralysis; keeping up a steady but mild action of the bowels has an excellent effect, and I need not impress upon you the necessity of paying strict attention to the bladder. —*Ibid.*—*Ibid.*

14. *Paralysis consequent on Apolexy.* By William Stokes, M.D. With respect to the paralysis which is consequent on an attack of apoplexy, there is the greatest possible variety. In some cases there seems to be paralysis of all, or almost all, of the muscles of animal life; in others, it affects only the muscles of one side of the body. A rare and extraordinary form of paralysis has been described by the French writers, who have given it the name of *paralysis croissee*. In this form of the disease, there is an affection of both sides, but not of the symmetrical members; for we find the left arm and the right leg paralyzed, and *vice versa*. This is an unusual form, in fact, the rarest to be met with in practice. We may also have great varieties in the amount of the paralysis; in some cases both sides being affected, in others only one, while in others there is only a single extremity or one side of the face paralysed. We may also have complete paralysis of one side without any affection of the face. I remember a remarkable case of this kind, of which I shall give you an abstract. A gentleman, of stout muscular habit, and with a strong full pulse, had been suffering for a long time under an obstinate gouty affection. From a repetition of the gouty attacks he got a chronic swelled state of the lower extremities, which continued for some time, he being in other respects in the enjoyment of excellent health. The swelling, however, preventing him from taking his usual exercise, he applied for advice. Laced stockings were advised, the effect of which was, that the œdema had subsided, and the motion of the lower extremities was restored. It is curious, that, between the period of the removal of the œdema and the paralytic attack which I am about to describe, this gentleman enjoyed excellent health. At the end of that time, on attempting to go over a step that led into the yard, he found he could not accomplish his purpose, and struck his foot against the stone. He immediately became alarmed and sat down, and soon after found that he had lost the power of using his arm. I saw him in a short time after the accident, and found that there was complete paralysis of the arm and leg, but no distortion of the face or tongue, or the slightest lesion of intelligence. He continued in this state for some time, and then recovered, but it was necessary to take a large quantity of blood from him. In the first bleeding, as the pulse was full and bounding, I took sixty ounces of blood from the arm, and I think it was owing to the activity of the measures adopted, that he recovered so

speedily. I mention the case merely to show that we may have paralysis of the leg and arm, without any affection of the face, or loss of intelligence. In some cases we find the paralysis affecting the tongue, face, and muscles of the eye-lids; in some we have paralysis of the sphincter ani, or of the muscles of deglutition, or of the bladder, but these are rare, and the most ordinary form is paralysis of the muscles of one side, and distortion of the face. There is another circumstance, which seems to be of so frequent occurrence as to form a law, perhaps the most general of any in medicine, that paralysis occurs on the side of the body which is opposite to that on which the effusion occurs. If you have an effusion into the right hemisphere, you will have paralysis of the left side of the body, and, if the effusion be on the left side, the paralysis will be on the right. To this rule, however, it has been stated that there have been a few exceptions; how they have occurred it is totally impossible to explain, it is sufficient for us to know that such exceptions have been witnessed. Cases of this description have been very rarely seen since pathological anatomy has been studied with more diligence; it is, however, true, that a few facts have been detailed by men of great professional eminence. We want facts to throw light on this point, and, until this is accomplished, we must remain in ignorance of the cause of the anomaly. In the vast majority of instances, the paralysis is on the opposite side to that on which the effusion takes place, and this appears to be explained by the decussation of the fibres of the brain at the upper part of the spinal marrow, the fibres of the left side passing to the right, and *vice versa*. It is an interesting fact connected with this subject, that the muscles of the face follow the same law as the muscles of the extremities, and yet it is a fact, as you are well aware, that the nerves which supply the muscles of the face come off before the decussation of the fibres of the brain takes place. The fifth nerve, which supplies the face with branches, is given off at a considerable distance from the decussation of these fibres, and yet we perceive that the muscles, to which it is distributed, obey the same law as those which derive their nerves from the spinal cord. Now, if this decussation was the only cause of the paralytic symptoms being observed on the side opposite to that in which the effusion occurs, the muscles of the face should be an exception to this law, but we find that they correspond with other parts of the muscular system in this respect. Thus if a man gets an attack of apoplexy, followed by paralysis of the left arm, we find the left side of the face affected, and *vice versa*. We must conclude from this, that the mere decussation of the fibres is not the sole cause of this peculiarity, and must look for an explanation elsewhere, by referring it to the intimate communication which exists between both sides of the brain by means of its commissures. Many persons are not familiar with the phenomena of the face and tongue in paralysis; they are, however, simple and easily explained. Let this diagram represent the head—here we have the right hemisphere of the brain, here the left. Now, suppose you have an apoplectic effusion in the right hemisphere, the consequence is, that you have paralysis of the left side of the body, according to the law already mentioned. What will then happen with respect to the fact is, that the muscles of the left side being paralyzed, and their antagonism being destroyed, the mouth is drawn by the sound muscles of the opposite side from the paralyzed side, and

this is invariably the case. Recollect then that the mouth is always drawn from the paralyzed side, and towards that side where the disease exists in the brain. But when you desire the patient to put out his tongue, do you find that the tongue follows the direction of the mouth? No; it goes towards the opposite side. This appears somewhat paradoxical at first, but is easily explained. The protrusion of the tongue is effected by the action of the genio-hyo-glossi muscles, which are, as you all know, a pair of fan-shaped muscles, attached to the inside of the chin, the middle line of the tongue, and the body of the os hyoides. This diagram will represent it. Here is the muscle of the left side, and here is the right. When the patient puts out his tongue, this left half being paralyzed, and having lost its antagonism, the tongue obeys the action of this, the right half, and the fixed point of attachment of the muscle being to the right of the mesial line, the base of the tongue is brought forward, and to the right, and its point consequently deviates to the left or paralyzed side. It has been remarked also, that there is some variety with respect to the paralysis of the tongue; some patients can protrude it, others cannot. In some cases too, the patient can put out his tongue well enough, but he cannot employ it in the articulation of sounds, and his speech is quite indistinct.

With respect to paralysis of the extremities, the upper are paralyzed more frequently than the lower; and, when both extremities are engaged, the upper are generally more completely affected than the lower. When a person recovers, also, we find that the lower extremities are the first to regain their lost power and sensibility. These circumstances have been attempted to be explained by considering the particular parts of the brain in which the effusion has occurred; but, as this has not as yet been sufficiently made out, I shall pass it over. I regret, also, that I have not time to enter into the subject of the different varieties of lesion of intelligence in cases of apoplexy. I must, however, observe, that the varieties are infinite, and your trouble will be amply repaid by reading what has been written on this point by Dr. Abercrombie, and Dr. Cooke in his Treatise on Nervous Diseases. You will find in the latter work an extraordinary collection of facts with respect to lesions of the intellectual functions.—*Ibid.*—*Ibid.*

15. *Paralysis from disease of the Arterial System.* By William Stokes, M. D.—I wish to call your attention to a remarkable form of paralysis, in which the disease appears, as far as we can see, not to depend on any primary lesion of the *nervous system.* In this form we have a paralysis, not the result of any disease of the brain or nerves, but connected with an affection of the vessels of the part. This is a very singular disease, and I am anxious you should be acquainted with it, for I believe it is by no means so rare as many persons think. The other point to which I would direct your attention refers to the influence of magnetism on the human body; of this I shall speak on a future occasion, confining myself for the present to that form of paralysis which is connected with disease of the *vascular system.*

So as to give you some idea of this affection I think I cannot do better than read for you the notes of a case of it, published

by Dr. Graves and myself in the fifth volume of the Dublin Hospital Reports.

A man, aged 44 years, was attacked in December, 1828, with alternating sensations of cold and burning heat in the toes of the right foot. These extended to the leg, of which the power became diminished. Pains in the foot next occurred, and in a month the part became cold and wholly deprived of sensation.

On the day of his admission the pain suddenly extended to the calf of the leg; and from this time he lost all power of motion in the leg. On admission the temperature of the body, with the exception of the affected limb, was natural. The pain had extended to the thigh during the night. The temperature of the limb was but 58 deg. of Fahrenheit. Slight œdema existed about the ankle. There was complete loss of sensation from the middle of the thigh to the toes; the patient could rotate the thigh slightly, but there was no other voluntary motion possible. The femoral artery appeared like a hard cord, painful on pressure, and without pulsation. By the stethoscope we found that pulsation was also wanting in the common iliac on this side, while that of the left iliac was plainly perceptible. The patient died on the fourth day after admission, the limb having become purple, tender, and covered with vesications.

On dissection, the right common iliac appeared distended and livid, and was completely plugged up by a dark clot, extending to the external and internal iliacs, and engaging the gluteal and obturator arteries. The same occurred in the femoral and profunda, and extended as far as they could be traced, to the tibial arteries, and to the peroneal. The lining membrane of these vessels was soft, villous, and red; the clot in some places being separated from it by a layer of puriform matter. No disease in the veins. A large portion of the vasti and rectus muscles was *white* and hardened. Here you perceive a train of symptoms, some of which might be referred to disease of the brain, if the man had any cerebral symptoms, which was not the case, for his intellect was sound, and he had no evidence of cerebral disease except the paralysis.

His constitutional symptoms were emaciation, prostration of strength, and loss of appetite. The temperature of the body was natural, but, on examining the limb, we found, (and this is a point of great importance,) that it was as low as 58 deg. of Fahrenheit; in fact, it was quite cold. There was also complete loss of sensation from the middle of the thigh to the toes, and though he could rotate the limb slightly, it was, in all other respects, powerless. Here we have paralysis of motion and seasation in one of the extremities, *with remarkable coldness of the limb.* On making an examination along the track of the femoral artery, we found that it was painful on pressure, *without any pulsation*, and conveying to the finger the feel of a piece of hard cord. From a consideration of those circumstances, we came to the conclusion that it was not pervious, and that this would account for the state of the limb. In this case, also, we made another remark, and this, I believe, is the only instance on record in which such a diagnosis was made. Up as high as the groin, the pulsation of the femoral artery could not be felt, and we were anxious to ascertain how far farther the disease extended. The state of the femoral artery in the left groin was natural. On making an examination with

the stethoscope, we found that the pulsations of the aorta were perceptible down to its bifurcation, but when the stethoscope was applied below this on either side, we observed that there was no pulsation in the right common iliac artery, but on the left side it could be traced distinctly down to the groin. Here then we had a train of phenomena, such as ordinarily occur in paralysis affecting the right lower extremity, and along with this an obstruction to the circulation in the thigh and leg. From these circumstances we made the diagnosis of obstruction of the right iliac and femoral arteries. On dissection we found that the aorta was healthy to within about six inches of its bifurcation; below this point it was partly filled by a red clot. The left common iliac was healthy, but the right was plugged up with a dark red clot, which extended into the internal iliac and obturator arteries, filling up also the femoral and its branches. The case, in fact, was nothing more nor less than one of chronic arteritis.

This remarkable form of disease has been also observed by other authors. You will see in Rostan's work on the softening of the brain, the reports of two cases of this disease, occurring in patients of extremely advanced age. In one, there was complete paralysis of the right arm, which was cold and livid. The fingers were threatened with gangrene, and no pulsation could be felt in the radial artery. By stimulating frictions a certain degree of warmth and motion was restored, and it was even thought that pulsation could be perceived. By degrees the power of the left arm of the lower extremities began to fail, with diminution of the force of the pulsation. On dissection, extensive disease of the arteries was found; the right brachial, at the insertion of the deltoid, was obliterated by a mass of fibrin, below which the vessel was contracted and closed; the left brachial artery was also narrowed, but without any clot; and this condition was farther met with in the crural vessels. The cerebral arteries and the aorta was diseased. In the second case, the patient, aged eighty, was attacked with violent pains in the left leg, which became cold and bluish. There was no lesion of intelligence, and the corresponding arm was unaffected. In fifteen days, the pains having augmented, a certain degree of paralysis supervened, which, however, was never complete. On dissection, (the disease having lasted a month,) the crural artery was found extensively obliterated by a fibrinous clot. Here you observe, gentlemen, that, notwithstanding the great age of both patients, the disease was not *ossification*, but, in all probability, *arteritis*.

In persons advanced in life, the arteries are also frequently obstructed by the formation of ossific deposits within them, producing loss of power, coldness, and diminution of sensation. A similar fact may occur from the pressure of an adjoining tumor on the trunk of a principal artery.—*Ibid, Sept. 6th and 13th,* 1834.—*Ibid.*

13. *Diagnosis of Paralysis from disease of the Arterial System.*—By William Stokes, M. D.—Paralysis resulting from disease of the arterial system, is distinguished from paralysis caused by cerebral disease, by the following marks: first, by the color of the integuments of the affected limb, which, in a case of the former description, are generally of a violet hue, or of a much deeper tinge than in the latter case, or in a state of health. It is very rare to find the two

limbs of the same color, as we do in cases of cerebral paralysis. Another mark is, that the temperature of the limb is always lower than that of the healthy one; but the distinctive sign of this form of paralysis *is the absence of pulsation in the arteries in parts where it should be naturally observed.* If to this description you join the absence of cerebral symptoms, you will seldom fail in making a correct diagnosis. I have had two cases of this disease under my care; one of them occurred in the upper, the other in the lower extremity, and, from observing the characteristic marks already detailed, I had no difficulty in making the diagnosis.

The subject of this last case is a gentleman who has been for the last four of five years laboring under paralysis of the lower extremities unaccompanied by any symptoms indicating disease of the brain. His intellect remains not only unimpaired, but in a state of high activity; and, what is equally singular, he has had none of the usual symptoms of disease of the vertebræ or spinal cord. His limbs, however, are quite powerless, and are of an *icy coldness*, and yet you will hardly believe me when I tell you that I have repeatedly felt the femoral, popliteal, and even the anterior tibial arteries pulsating distinctly! This is a singular fact, but I have verified it by a number of observations. You will perceive, then, that in taking a remarkably diminished temperature as a diagnostic of paralysis from arterial obstruction, we must admit that as a sign it is only valuable *when combined with absence of arterial pulsation.* In this case, the fact of such extreme coldness of the lower extremities at the same time that their circulation continues with undiminished activity, becomes of great importance, as tending to prove that the temperature of the body depends more upon the state of innervation than on arterial action. There are, indeed, many facts which go to prove that animal heat is more closely connected with the nervous system than with the circulating.

It is to that peculiar form of this disease, which is considered by some authors to depend on ossification of the arteries, that the name of "Pott's Gangrene" has been applied. A great deal of light has been thrown on this disease by the researches of modern pathology. It is now pretty well established, that we may have this gangrene, not only in old persons from ossification of the arteries, but also in the young from arteritis. In truth, the pathology of Pott's gangrene appears to be of one or two changes,—either an arteritis or ossification of arteries themselves; and of these two causes the first is by far the most frequent. You will see at once the importance of this view of the question, for if the gangrene occurs in a young person, and is connected with inflammation of the arteries, it is a disease more or less under the control of medical treatment; but if it be produced by ossification of the arteries, the results of treatment are far less likely to be successful.

We have, then, in a case of paralysis of this description, more or less loss of sensation and motion, coldness of the limb, and absence of arterial pulsation. With respect to coldness, it may be said that it is of little value as a sign, being frequently observed in cases of cerebral paralysis. To this it may be replied, that though colness is sometimes present in cases of ordinary paralysis, still it is never so remarkable as in this form of the disease, and the temperature of the

limb is but a few degrees below the standard of health. Dr. Abercrombie makes a very interesting conjecture on this subject. He says, the temperature of paralyzed limbs is generally considered to be lower than that of the healthy ones, and, indeed, such is the case; but the true explanation of this occurrence is, that in this condition the limb loses its power of preserving a medium temperature, and hence it is that, according to the temperature to which it has been exposed, it becomes hotter or colder than the healthy limb. A case is mentioned of a medical man who labored under paralysis of one of the upper extremities. This gentleman, on one occasion, after having applied some warm bran to the paralyzed limb, was astonished to find, on touching it with his sound hand, that he could not bear the heat, though he was at the same time unconscious of any increase of temperature in the paralytic extremity.

The symptoms, then, of this form of paralysis, are diminution or abolition of sensation and the power of motion, a dark or violet hue of the skin, remarkable coldness, and absence of pulsation in the arterial trunks which supply the affected limb. These, with a tendency to the formation of gangrene, are the characteristic marks of the disease, and, by bearing them in mind, you will seldom err in making a diagnosis. In the great majority of cases the disease is confined to one extremity; but Rostan gives some cases in which it was more general. We might also add to the diagnosis, that paralysis connected with disease of the brain often comes on suddenly, while, in this case, its invasion is slow and gradual. It is, however, true, that some cases of paralysis, depending on this cause, have come on so suddenly, as to render this circumstance of less value as a diagnostic. —*Ibid.*—*Ibid.*

14. *On Paraplegia.* By William Stokes, M. D.—Before I leave the subject of paralysis, I wish to draw your attention to one more form of the disease by no means uncommon; I allude to that in which *both* the lower extremities are exclusively engaged. This is a disease or symptom which may arise from a great number of causes, and be observed under a variety of circumstances. Generally speaking, however, it will, in almost every instance, be found to depend on some cause which engages the spinal marrow, either primarily or secondarily. I believe that this paraplegia, as the result of disease of the brain, is never met with except in combination with paralysis of the upper extremities. General paralysis may be produced by cerebral disease, and in describing the various forms of paralysis which depend on disease of the brain, this form has been particularly noticed, but when paralysis of the lower extremities *alone* occurs, it is generally the result of some lesion of the spinal marrow, either organic or functional, below the situation in which the brachial nerves are given off. Among the causes by which this paraplegia is produced, the following are the principal: inflammations of the membranous coverings of the spinal cord with effusion of lymph or serum; spinal apoplexy; ramollissement from inflammation of its substance; pressure on the cord, by solid tumors from a variety of causes; the bursting of abscesses or aneurismal swellings into the vertebral canal as occurs in some cases of aneurism of the abdominal aorta. Thus during the progress of a case of this description, it has been observed

that the patient suddenly became paraplegic, and, on examination after death, a quantity of blood which escaped from the aneurismal tumor has been found compressing the spinal marrow. Lastly, recent investigations have established the fact that we may have paralysis of the lower extremities, and yet on dissection *we cannot detect any traces of disease in the bones of the vertebral canal, or in the membranes or substance of the spinal cord.* Hence, gentlemen, you see how cautious you should be in making the diagnosis, so common among surgeons, of caries of the vertebræ, in cases of paralysis of the lower extremities. The truth is, that in the present state of medicine on this subject, we labor under very great difficulties; the diagnosis of these affections is exceedingly obscure; it is a subject still open to investigation, and I need not remark that it is one of paramount importance.

Paraplegia is one of the most miserable diseases to which the human body is liable. It is almost always obstinate and unmanageable, and in the majority of cases incurable. How far the fatality of the disease depends upon the want of an accurate diagnosis, and a correct plan of treatment, must be determined by future observations, but it is a fact that a vast proportion of paraplegic patients die, and under the most melancholy circumstances. In many cases the formation of gangrenous sores on the back and loins is a common occurrence. For this there are two reasons; first, the vessels of those parts exposed to pressure from position fall into that state which Andral terms *mechanical hyperæmia*, the result of which is that they are unable to unload themselves, a stasis of blood follows, and this leads to mortification of the part; secondly, there is a lesion of innervation. Hence it is that the great majority of patients of this kind die with gangrenous sores on the back and loins. They have also most constantly paralysis of the bladder or its sphincter, or both, producing retention of urine, or retention with incontinence, or stillicidium urinæ. The sphincter ani, too, is generally paralyzed, and we have a most melancholy and disgusting source of annoyance. The frequent passing of urine and fæces keeps the unfortunate sufferer in a state at once pitiable and loathsome, and when, in addition to his other calamities, the gangrenous sores form, the supervention of low diffused erysipelatous inflammation may prove fatal; or he may be carried off with symptoms of typhus fever from the absorption of putrid matter.

While on the subject of paraplegia, I am anxious to lay before you a sketch of some important opinions lately put forward by Mr. Stanley of London. In the last number of the Medico-Chirurgical Transactions, this gentlemau has written a most interesting paper, in which he gives the history of several cases of paraplegia, the majority of which were supposed to be examples of caries of the vertebræ, but in which, on dissection, no disease could be discovered, either in the bones of the vertebral canal, or in the membranes or substance of the spinal cord. You will ask, were there no pathological phenomena in these cases? There were, but they belonged not to the spine or its contents, but to an organ in its immediate vicinity—the kidney. From a candid review of Mr. Stanley's cases, there appears to be reason to believe that disease of the kidneys may produce all those symptoms which have been attributed to lesions of the spinal marrow,

or caries of the vertebræ. In the four first cases, the symptoms given as of caries of the vertebræ were present, and the cases treated as such. On dissection, no caries, or disease of the cord, could be discovered in any of them, but the kidneys were found to be the seat of extensive disease. The fifth case was a remarkable one: the patient had been admitted for retention of urine, the consequence of severe gonorrhœa, which had been checked by injections. The bladder and sphincter ani became paralytic, and he lost the power of the lower extremities to a certain degree. He also complained of severe pain at the fifth lumber vertebra. He distinctly traced the pain from the bladder to the left kidney, and then to the right. Paralysis of motion, and, nearly, completely of sensation of the lower limbs, next supervened, and in about a fortnight he died. On dissection, the kidneys were found in a state of inflammatory softening, and with numerous depositions of pus. The bladder was inflamed, but the brain and spinal cord were perfectly healthy. In the sixth case, a patient, while in progress of cure of a gonorrhœa with phymosis, was suddenly seized with paraplegia. The functions of the brain were unaffected. He had suffered for a day or two from pain in the loins. Sixteen hours after this attack, he suddenly died.

From considering the former cases, Mr. Stanley predicted that inflammation would be found in the kidneys. A slight turgescence of the vessels of the cord, with a little transparent effusion in the theca, were found, but the kidneys were in a state of the most intense engorgement. In this case, it was remarkable that from the period of the paraplegia, there was no inordinate secretion of urine. The seventh case was that of a patient who, for two years, had been laboring under pain of the back, increased by pressure, and incontinence of urine. On dissection there was some vascularity and effusion of the cord, but both the kidneys were almost entirely destroyed by disease. In addition to these, Mr. Stanley mentions four more cases, which were seen by a friend of his, Mr. Hunt, of Dartmouth, which corroberate his opinions.

Here, then, we may have well-marked paraplegia without any perceptible organic change in the spinal cord or its investments, but presenting distinct traces of disease of the kidneys. This leads us to observe the very close connection which exists between the kidneys and spinal cord, a connexion which has been long recognized by medical practitioners, but only in a limited point of view, for though they were of opinion that disease of the kidneys, and a discharge of ammoniacal urine, were the results of spinal disease, they never seem to have reflected that the reverse of this might happen. It seems now, however, to be almost completely established, that disease of the kidneys may produce symptoms which are referable to disease of the spine; and Mr. Stanley has the credit of having been the first who directed the attention of the profession to this circumstance, and his paper must be considered as one of the most important, and practically useful, which has appeared for a length of time. You should all peruse it carefully. The fact that disease of the spine will give rise to affections of the kidney, is long known, and has been proved by numerous experiments. Thus Ollivier details the experiments of a German physiologist, M. Kreimer, who, by dividing the lower part of the spinal cord in animals, made the urine ammoniacal. You will

also find in Dr. Prout's work, that an ammoniacal state of the urine may be rapidly brought on by injuries of the back from falls or bruises on the spine. It is indeed singular how quickly those profound functional lesions of the kidneys supervene on injuries of the spine, sometimes appearing in four or five days, sometimes sooner. Medical men have hitherto been in the habit of looking at this matter only in one point of view; they know that disease of the spine will produce disease of the kidneys, and here they stop; but it has been shown that the reverse of this may happen, and that renal disease may produce very remarkable lesions in the functions of the spine. Of this very curious occurrence we have many analogies in pathology. Thus, for instance, in several cases of cerebral disease, but chiefly in hydrocephalus, we have vomiting; here we have functional disease of the stomach depending on an affection of the brain. Take the reverse of this,—observe the delirium which attends a case of gastro-enteritis,—here you have the functions of the brain deranged in a most remarkable manner, and this produced by sympathy with an inflamed mucous membrane. The truth is, that in the spine and kidney, as well as in various other parts of the system, we have two organs which are so closely connected by sympathy, that disease of one will bring on serious functional lesion of the other.

Observe then, gentlemen, the great importance of these inquiries. When you meet with a case of paraplegia, you are not at once to conclude that it depends on disease of the spine or caries of the vertebræ. You must carefully investigate its history, and ascertain whether it may be referred to either of these causes, or whether it may not rather depend on disease of the kidneys. That it may depend on the latter cause is now established, for the cases are too numerous for us to suppose the complication accidental. You will observe the importance of making an accurate diagnosis when you consider that this point will most materially influence your treatment. In the one case, your treatment will be directed to the bones and cartilages of the spine; in the next, to the spinal cord itself; and, lastly, to the kidney, a parenchymatous organ, to which there is a great determination of blood. No one will venture to assert that the principles of treatment in each of these cases are the same; and the chances are, that, if you do not make a correct diagnosis, you will practise improperly, and without success. I have now seen a number of these cases, but there were only two of this dsecription in which I was fortunate enough to obtain a post mortem examination. I cannot say that my dissection exhibited remarkable disease of the kidneys, (they were large and very vascular,) but, from the many points of resemblance they bore to Mr. Stanley's cases, I was led to conclude, that if they were not examples of actual chronic disease of the kidney, they were cases of lesion of function in the spine, unaccompanied by any organic change to account for the symptoms. I shall briefly detail these cases;—the first was that of an unfortunate man from the country, who was discovered by two friends of mine under peculiar circumstances. While on an excursion they were requested to visit a poor man who was lying ill at a remote farm-house. They heard he had been laboring under a dropsical affection for a long time, and had been treated for ascites. On arriving at the cottage, they found the man lying in bed, with his abdomen very much

enlarged; and, on farther investigation, discovered that he was quite paralytic of the lower extremities. On examining the belly more particularly, they found that the swelling was produced, not by ascites, but by *an enormously distended bladder*. He had also stillicidium urinæ, with paralysis of the bladder; and this having been mistaken by the medical practitioner who attended him for suppression of urine he had prescribed diuretics, and continued this plan of treatment for some weeks, totally overlooking the paralysis of the bladder. As little or nothing could be done for him in the remote situation in which he lived, it was determined to send him up by easy stages to Dublin, and procure him admission at one of the public hospitals. On his arrival he was received at the Meath Hospital; and when I visited the wards next day, I found that he was quite paralytic of both lower extremities, that the bladder was in the state above described, and that his health had suffered considerably, and that bed-sores had formed on his back, and were increased by his journey. I prescribed cupping and blistering, which were productive of same slight relief, but in the space of a few days he began to exhibit symptoms of low typhus, as if from the absorption of pus, and sank rapidly. On examining his body, we could not detect any traces of disease in the bones or cartilages of the spine; neither did the cord, or its membranes, present any marks of organic lesion, except that towards its lower portion, where it begins to spread out into the cauda equina, it was perhaps a little softer than natural. I regret very much that I did not note the circumstances of this case more fully; but, as far as my recollection of it goes, the general features were as I have just mentioned. I had another case some time since in the Meath Hospital, in which the following circumstances were observed:—The patient, a laboring man, generally employed about the quays, was brought into the hospital with paraplegia of some standing. The first symptom in his case belonged not to the spine, but to the urinary system; he had an attack of gonorrhœa, for which he had used stimulants and balsams; and, in some weeks after, without any injury to the spine, he lost the use of his lower extremities. During his stay in the hospital the urine was intensely ammoniacal. On examining his body after death, we could not discover any disease of the bones or spinal marrow. A layer of substance resembling fat or organized lymph was found lying on the theca of the spinal marrow, but it was so very small as to be scarcely sufficient to account for the symptoms. The kidneys were pale, flabby, and without any vascularity, but did not present any marked traces of organic lesion.

Here then, gentlemen, were two cases which, before the publication of Mr. Stanley's paper, would be considered as examples of organic disease of the spinal cord or its investments; and yet, on dissection, we can find nothing to establish this opinion; and, in the last one, the first affection was of the urinary system.

Is it possible that a *functional* disease of the urinary system may produce also a *functional* disease of the spinal cord?

With respect to the diagnosis of caries of the spine, I wish to make a few observations. The diagnosis where there is distortion of the spine, is extremely easy, but this does not hold where the caries is accompanied by distortion. Let us inquire—are there any circumstances which would enable us to arrive at the diagnosis of caries

without distortion? One symptom, not observed, as far as I can see, in paralysis *connected with disease of the kidney* is, that the patient feels exquisite pain on motion. This is an exceedingly common symptom in caries of the vertebræ, but I am not aware that it occurs in cases where the disease is situated in the kidney or the spinal cord itself. There is another remarkable circumstance:—When the patient attempts to move, he often feels a cracking sensation in the affected portion of the spine; and this has not only been observed by the patient himself, but is also perceptible to his medical attendants. When this occurs, it may, I think, be looked upon as a diagnostic symptom. The exquisite pain on motion, the tenderness of the spine on pressure, and the cracking sensation,—these might be sufficient to make the diagnosis of caries of the vertebræ, even in cases where there was no distortion. But if you had a case of paralysis of motion and sensation of the lower extremities, and if these symptoms came on without any injury of the spine, if there was little or no tenderness on pressure, if the patient felt scarcely any pain on turning or moving, and if he had at the same time symptoms of disease of the kidney or bladder, and ammoniacal urine, under these circumstances the great probability would be, that it was not a case of caries of the vertebræ, or original disease of the spinal cord or its investments, but a lesion of function of the spine, connected with organic or functional derangement of the kidneys. It must be acknowledged, however, that the diagnosis of this affection is rather obscure. The circumstances which I have just mentioned might enable you to get rid of the opinion that it was caries of the vertebræ or organic disease of the spinal cord, and that it was probably such a case as Mr. Stanley has described; and if you could arrive at this diagnosis at an early period of the case, it would be a matter of great importance. By doing this you would then be aware that you had to deal with an inflammatory affection of a highly vascular organ; you would not be led away from the real state of the case, or waste time in treatment calculated to stimulate the spine, or remove disease of the vertebræ. Your plan would be simple, and your treatment defined, and all your efforts would be directed towards removing the disease of the kidneys. You will easily perceive, gentlemen, that diagnosis is here of vast importance; unfortunately, it is still involved in obscurity.

The prognosis of cases of paraplegia, when once complete paralysis is established, should be always unfavorable. The fact of paralysis occurring, is sufficient in itself to prove the existence of extensive disease in most cases. There may be, however, some cases susceptible of cure, and this particularly occurs in young females, in whom a perfect cure has been frequently accomplished by the use of stimulent embrocations to the loins. I have seen one case of this kind, in which the patient was paraplegic for a year and a half, cured by the application of hot oil of turpentine over the lower part of the spine. Simple as the treatment may appear in this case, its success was rapid and complete. Mr. Crampton has mentioned to me another case, in which the patient's limbs were quite rigid, and could not be moved without great difficulty; in this case, complete relief was obtained by applying Pearson's liniment over the lower part of the spine. This liniment produced powerful counter-

irritation, and an eruption of bullæ over the body, which were speedily followed by relief. The patient is now in the enjoyment of good health, and since the period of her cure, which is now better than six years ago, has had no return of the disease.—*Ibid, Sept.* 13, 1834.—*Ibid.*

18. *Treatment of Paralysis consequent on Apoplexy.* By William Stokes, M. D.—The paralysis, which supervenes on an attack of apoplexy, is to be treated always in the first place by means directed to the head, and the brain is to be put in such a state as will favor the removal of the clot by the means already recommended; in addition to which it will be necessary that the body and extremities should be kept in a warm temperature. But there is this very singular circumstance connected with some cases of paralysis, that a period will arrive when, although the original disease of the brain has been removed, and the clot absorbed, the paralysis still continues. It is not easy to explain this circumstance, but it has been observed in many persons, who have been paralytic, that the clot was completely absorbed, and no existing trace of disease discoverable, such as would account for the continuance of the paralysis. In cases like this, we must adopt a different mode of practice, and have recourse to measures capable of exciting the brain, and we have reason to believe, that whatever will excite the brain and restore its energy, (I must use this phrase for want of a better,) will cure the paralysis. We find that, in some cases, where the brain of a patient, under such circumstances, has been exposed to any sudden stimulus, whether physical or moral, the symptoms of paralysis have disappeared, sometimes gradually and slowly, at other times rapidly and at once. Now, this disappearance of the symptoms shows that the paralysis did not then depend on the presence of a clot, for if an unabsorbed coagulum remained in the situation of the original extravasation, the paralysis would not disappear. But it has been frequently observed, that a patient, laboring under paralysis, may get rid of his symptoms suddenly, or that, at a certain period, they begin to decline, and then go away altogether. From a consideration of these circumstances we are led to divide the treatment of paralysis of this description into two parts, and endeavor first to excite the brain itself and next the nerves, which supply the paralyzed limbs. For this purpose several remedies, supposed to be capable of stimulating the brain, so far as its action on the muscular system is concerned, have been recommended, the most important of which is the nux vomica, or its active principle, strychnine. The researches and experiments of modern medicine have already established the efficacy of strychnine in such cases, but you will recollect, as I before stated, that this powerful remedy can be employed with safety only in cases where the paralysis continues after the disappearance of organic disease of the brain. Until that period arrives, and all symptoms of congestion and excitement are removed, it would be improper to prescribe the use of strychnine. One of the most recent publications on this subject is from the pen of Dr. Bardsley, of Manchester, in which you will find an exceedingly interesting series of cases treated with strychnine, and many of them with the most decided success. In most of these cases, you will find that Dr. Bardsley, even where

the disease has been of some standing, *precedes the use of strychnine by measures calculated to deplete the head*, even though the cases were chronic. Hence, whenever you are about to prescribe this remedy, you should be satisfied that depletion has been sufficiently performed. You may be called to treat a patient for paralysis after an apoplectic attack. Here you must consider how far you are to premise the use of strychnine by depleting measures, and you must also reflect that we here have shadowed out one of the most important principles in medicine, *that in almost all cases where a cure is to be attained by stimulation, it will be effected more readily, and with much more certainty, when preceded by local depletion, no matter how long the disease may have lasted.* The efficacy of strychnine in paralysis seems to be dependent on the antecedence of local or general depletion.

Strychnine being an exceedingly active remedy, and having a most powerful effect in stimulating the brain, it being also, one of the accumulative class of medicines, it will be proper to commence its exhibition with a very small dose, and watch its effects with care. The following is the formula which I would recommend you to employ. You take a grain of strychnine, and your object being to divide it into a number of equal parts, (say sixteen,) to ensure an accurate division, you dissolve it in a small quantity of alcohol, and having mixed this solution with a sufficient quantity of bread crumb or conserve of roses, you divide it carefully into sixteen equal pills. In this way you may be tolerably certain that each pill contains one-sixteenth of a grain. Begin at first with one pill a day, next day you may give two, and so on until you have brought it up to half a grain or a grain, watching carefully its effects. Now, what are these effects? They are very analogous to the phenomena produced by inflammation of the brain taking place in the vicinity of the clot; namely, spasms of the muscular system.

It is also a curious fact, that these spasms are principally observed on the paralyzed side; in other words, that the portion of the brain which has been affected by disease is more sensible to the stimulus of the strychnine, the consequence of which is spasmodic twitches in the paralyzed limbs. The great nicety of practice in the treatment of paralysis in this way, is to keep up a certain degree of this irritation without letting it proceed to any degree of violence, and to omit it whenever the following symptoms become manifest,—head-ache, giddiness, weakness and sickness of stomach, and too violent spasmodic twitches of the limbs.

There is a great difference with respect to susceptibility of the effects of this remedy in different individuals; in some the effects speedily appear, and you are obliged to intermit its use; others will bear large doses for a considerable time, and you may push the strychnine until a grain or a grain and a half is taken in the day. I have myself given to one patient a grain every day for the space of a fortnight without any intermission. In all cases, however, it will be necessary to watch the symptoms. There is one effect of strychnine which appears to be unfavorable, and whenever it occurs you should either omit the medicine or diminish the dose. Along with or succeeding the spasms, *there is a tonic rigidity of the limbs;* when this occurs you should be cautious in the administration of strychnine. The length of time which it should be continued will of course vary

according to circumstances, but you should be aware that it requires a considerable period of time to produce its effects. In all Dr. Bardsley's cases, and in all those treated at the Meath Hospital, it has been continued for a considerable time, certainly more than a month. It is also necessary for you to recollect that strychnine is one of those medicines which are termed accumulative; that is to say, remedies, the operation of which, after remaining latent for some time, suddenly explodes with great violence. When this occurs, the strychnine must be immediately given up, and steps taken to control its effects. One of the best things for this purpose is the carbonate of ammonia with some mild anodyne. I have seen very severe spasms from the use of this medicine. In one case these spasms were so violent as to roll the patient nearly out of bed.

It has been proposed to employ brucine as a substitute for strychnine. Of this remedy I can say but very little; I have given it but very seldom, I believe only in two cases, and in these without any sensible effect. It is much weaker than the former remedy, one-fourth of a grain of strychnine being equal to six grains of brucine. Other remedies have been proposed for the same purpose, among the rest, iodine, which has been recommended by Dr. Mansfield.

We now come to the local management of the disease, or that portion of its treatment which consists in the application of stimulants to the nerves and their origins. Local stimulation of paralytic limbs may be performed in a variety of ways; all the usual stimulant embrocations may be employed for this purpose with the best effects. I shall not take up your time in detailing the different kinds of liniments which are used on such occasions; they are universally known, and may be varied *ad infinitum*. The flesh brush, the shower-bath, either tepid or cold, occasional blisters to the spine, or along the course of the nerves, croton oil and terebinthinate friction,—all these are measures that may be employed with advantage. The use of the moxa has been also strongly recommended, and appears to be decidedly beneficial. The efficacy of all these remedies, however, seems to depend chiefly on the particular stage and nature of the disease, and hence their good effects are most apparent in those cases where the paralysis no longer depends on organic disease of the brain, but seems to be connected with that peculiar state of the nervous system which arises from a long interruption of the power of transmitting volition. It is in cases like this, that the application of the moxa has been found to produce the most favorable results. Where the lower extremities are affected, it may be applied over the sciatic nerve on the loins, or a little below and to the outer side of the popliteal space over the track of the peroneal nerve. In case of paralysis of the upper extremity, you may apply it to the back of the neck, or in the neighborhood of the brachial plexus.

A gentleman, who does me the honor of attending these lectures, has related to me the particulars of a remarkable case, which I shall mention *en passant*. A young female was subject to repeated violent attacks of spasms with contraction in one of the upper extremities. She had labored under this affection for a long time, and tried various remedies without benefit. At the suggestion of this gentleman she tried cupping in the neighborhood of the shoulder and brachial plexus, and found that it produced decided relief to the symptoms. In this

case it is highly probable that the disease was seated in the brachial plexus, and had no connection with the brain, for it had continued for a great length of time, (more than three years, I believe,) without any remarkable variation in its symptoms. If the spasms of the arm had been produced by irritation of the brain, she would in all probability have had paralysis long before this period; this, however, did not occur, and the probability that the disease was seated in the brachial plexus is still farther confirmed by the fact, that the spasms were relieved by local bleedings. Here we have the spasms relieved by antiphlogistic means, but in a case of atony of the same nerves, most benefit would be derived from the use of stimulants. The more completely the paralysis is of this description, the more sure will be the effects of local stimulation. You will sometimes meet with cases of paralysis from pressure on the nerves without organic disease. Thus there is a case on record, of a person who lost the use of one of his upper extremities, from having leant too long over a bench at a public meeting. I recollect the case of a man, who during a fit of intoxication fell asleep with his arm thrown over the back of chair, and awoke with perfect paralysis of the hand. Cases like these are seldom of long duration, and are much improved by the application of the moxa. I may state, however, that permanent paralysis has been induced in this way. The best way of using the moxa is, not to make a deep eschar, but to touch the parts slightly, and repeat the application frequently. In the case of paralysis of the hand, immediate relief followed the use of the moxa to the back of the wrist.

While on the subject, I may advise you always to employ the moxa in the mode first, I believe, devised by my friend and colleague Professor M'Namara. The top of the moxa is to be dipped in a strong solution of the oxymuriate of potass, which is to be allowed to dry upon it. The moxa being fixed to the part by a little gum, a drop of strong sulphuric acid will produce immediate ignition. In this way you prevent all the alarm which the patient feels at seeing a lighted candle brought to the bed-side. The same rule is to be observed when you employ electricity; the best mode of using which is to place the patient on an insulated stool, and draw sparks from, or shocks through, the affected limbs. Electricity frequently does much good in such cases; but in order to obtain decided benefit from it, you must persevere for some time in its employment. It has been lately proposed to employ the stimulus of electricity and galvanism in a different way, by transmitting it directly to the muscles of the affected limbs by means of needles, which are to be inserted into different parts of paralyzed extremities, and which are intended to act as conductors for transmitting the galvanic influence. This has been termed *electro or galvanic puncturation*, and forms an excellent mode of applying the stimulus of galvanism. I have made many experiments as to its effects, to which I shall briefly direct your attention.

The first thing to be considered is the manner of its application. The following is that which I use at the Meath Hospital:—Having procured two fine sewing needles, your first step will be to take the temper out of them; for, if you employ them in the tempered state, you will run the risk of their breaking in the flesh, and this would be

very disagreeable. You can easily take the temper out of them by holding them in a candle until they become red hot, and then letting them cool gradually. The next thing is to place a head which will remain firm on the needle, and for this purpose you pass a small portion of thread through the eye, and then cover it with a bit of melted sealing wax. Having thus formed a head for the needle, you sharpen its point, and polish it by the emery pincushion, and the sharper it is the better. There is nothing more simple than to introduce the needles. You make the part of the skin tense with your finger and thumb, where you intend to introduce them, and placing the point of the needle perpendicularly on it, you press it downwards in a slanting direction, using, at the same time, a rotary motion, and thus easily pass it in; when you have pierced the skin and fascia, there is no difficulty in introducing it into the muscular fibres. The distance between the needles must be regulated according to circumstances. You then proceed to send the galvanic fluid to the part, and for this purpose, the best mode is to employ a small galvanic battery with a limited number of plates. If you have plates of from two to three square inches you will find that from fifteen to twenty of these, in a state of ordinary action, will be quite sufficient, particularly in the commencement of the treatment. It is a curious fact, that the intensity of the shock is increased to an extraordinary degree by means of the needles. A battery which, in the usual manner, would not communicate any shock, will, when used with the needles, give a violent one, and communicate such a stimulus to the nerves as will throw the whole limb into violent spasms, and cause a copious perspiration to break out over the body. I have seen very great effects from a feeble battery in this way, and it would appear that this is the result of the *direct* transmission of the galvanic influence to the muscular fibre. In most cases a perspiration is brought on, the limb convulsed, and sometimes the whole body is thrown into spasms. As an illustration of the power of the battery when used in this way, I shall mention the following case:—A patient, who was under the care of Mr. Hamilton, labored under amauroses; he was anxious to try the effect of galvanism, and with this view inserted one needle in the upper part of the back of the neck, and another over the orbit, so as to direct the trajet of the fluid across the base of the brain. He intended at first to use a small battery of twenty-five plates, but it struck him that even twenty-five might be too much. He made the experiment with three pairs of plates, and the shock being given, the patient, to his astonishment, fell back as if he had been stunned by a violent blow on the head, and remained for nearly a minute in a state of insensibility. In other cases too, where the galvanism was applied in the vicinity of the head, I have found that severe head-ache, giddiness, and even a stiffness of the muscles of the face, were produced; all showing its powerful action on the nervous centre.

Some singular circumstances, connected with this subject, were observed in the Meath Hospital. It was found that after a certain number of shocks had been communicated to the parts, when you came to withdraw the needles, there was a very remarkable difference in the ease of removing them. The needle through which the positive galvanic influence had been transmitted, was found to be strongly fastened in its situation, while that, to which the negative pole had

been applied, slipped out with the greatest ease. This result was constant. In some cases, where half a dozen shocks or so have been given, the extraction of the positive needle has been only accomplished with considerable pain to the patient.

It has been suggested by a distinguished scientific friend of mine, that this results from the coagulation of albumen at the positive pole. Mr. Hamilton, however, who performed most of the operations for me, thinks that the true explanation is the paralyzing effect of the negative pole on the muscular fibre, while the positive needle is firmly grasped by the increased contraction. Farther researches are necessary on this point. Another fact connected with this subject is, that when the needles have been inserted into a large muscular mass, the positive needle is powerfully retracted, and carried as it were, into the muscles. In one case, where the needle was inserted into the lumbar muscles, in a patient laboring under sciatica, more than one-twelfth of an inch of it was drawn in at each shock; so that, after a certain number of shocks, it passed up to the head. This is one reason for using the sealing wax head, in order to prevent the complete passing in of the needle.

With respect to our experience of the value of this mode of employing electricity or galvanism, I have to remark, that, if galvanism or electricity can be of any use to paralyzed limbs, this is one of the best modes in which it can be applied. The apparatus is simple, can be prepared in a moment, and does not depend on the state of the weather, like the ordinary electrical machines. There is another advantage, also, it is not so likely to excite alarm in the mind of the patient. We have employed it in several rheumatic and paralytic cases in the Meath Hospital, but have not as yet been able to say that decided benefit has accrued from it to the majority of the patients on whom it has been tried. This is more particularly true with respect to paralytic patients; in the rheumatic cases we have found it more beneficial. In a remarkable case, where the deltoid muscle was paralyzed and atrophied from some affection of its nerves, Mr. Hamilton tried it for a fortnight without any good effects. In a case of senile amaurosis, its effect was to produce flashes of light before the eyes, lachrymasion, and contraction of the pupil, but, after a fortnight's trial there was no improvement in the sight. We have had, however, distinct and unequivocal proofs of its value in one case of paralysis of the muscles of the face, which had all the characters of that described by Sir C. Bell, as resulting from an affection of the seventh pair of nerves. This patient had been for a long time laboring under an affection of one side of the face, and had used a variety of remedies. Those principally employed were stimulating liniments and the internal use of strychnine, from which he derived some slight benefit; but the application of the galvanic fluid, in the way I have mentioned, was followed by decided and rapid improvement. Indeed, from the time it was first applied, the patient recovered rapidly, so that in a very short time all the deformity of face disappeared. Now the value of the application is to be estimated in this way. Here we have a case of paralysis of a local nature, and not depending upon any disease of the brain; in this case the galvano-puncturation was tried, and found to be most beneficial. The conclusion, then, as far a single case goes, is that this mode of treatment is best adapted to

the form of paralysis just mentioned, in which we find an affection of some of the muscles remaining after the original disease of the brain has been removed. The same observation, I need not tell you, applies to all other remedies which are employed for the purpose of local stimulation.—*Ibid, August 9th and September 6th*, 1834.—*Ibid.*

19. *Epilepsy cured with Indigo.*—The utility of indigo as a medical agent was first pointed out by Dr. Grossheim, a Prussian physician. The results which he obtained were favorable, and Dr. Ideler was accordingly appointed to make a set of experiments on pateints affected with epilepsy. Twenty-six patients were treated, and of these six recovered perfectly; three were apparently cured, but from eight to twelve months afterwards suffered a relapse under the influence of causes which of themselves alone were sufficient to generate epilepsy. Eleven patients were essentially improved, and of the whole number treated, only six experienced no change. The effects of indigo on the animal economy are in no ways disagreeable or dangerous; at first the patients vomited frequently, without any straining or derangement of the digestive organs, after a few days this ceased, and the patient had six or eight stools a day, sometimes accompanied with slight colicky pains; after a short time the purging diminished, the matter passed assumed a fluid character, and this state continued as long as the indigo was administered, without the appetite or digestive organs being injured. The useful reaction of the remedy on the nervous system was proved by the fact, that the epileptic attacks were more severe at the commencement, and seemed to assume a higher degree of intensity, but they soon became less frequent and violent, and at length disappeared. The remedy was commonly given in the form of confection with some aromatic powder, or on other occasions simply by itself. The dose to begin with is one scruple, which may be increased to a drachm after a short time, and gradually carried to half an ounce or an ounce.—*Lancet, June 6th*, 1835, *from Berlin Medicin. Zeitung. No.* 6.—*Ibid.*

20. *Amenorrhœa cured by Turpentine Injections.*—Dr. Elliotson has successfully treated in North London Hospital, two cases of amenorrhœa, by turpentine injections. The first case was a girl aged eighteen, in whom the catamenia had disappeared about four months before, in consequence of her having caught cold. She was in good health; the pulse 72, and full; she is, however, subject to swelling of the ankles. She was immediately bled to twelve ounces; and an enema consisting of half an ounce of oil of turpentine and a pint of decoction of barley was ordered to be administered every day. On the 5th of May the catamenia appeared, and she was discharged on the 12th quite well.

The other case is that of a girl, aged sixteen, who was admitted April 14th. The catamenia had disappeared about four months previously, without the cause being known. She appeared on her admission to be in good health; her pulse 78, and rather full. Ten ounces of blood were drawn, and an injection similar to that which was employed in the last case was administered. The catamenia appeared on the 18th, four days after her admission. The enemata were discontinued, and the catamenial discharge ceased on the next

day; they returned on the day following, and finally disappeared two days after that. She was bled to twelve ounces, and discharged quite well on May 12th.

Dr. Elliotson, in making some clinical remarks on these cases, said that he was induced to employ the turpentine injections in cases of suppressed menstruation from the circumstance of turpentine being considered an excellent emmenagogue when taken inetrnally. He consequently thought that it might be successfully used in the form of enema in amenorrhœa, as it was known that when it is employed for the removal of ascarides it is much more effective when administered per anum, than when given by the mouth. He had employed this remedy in the case of a lady who was partially insane in consequence of the supperssion of the catamenia. For eighteen months she had used all the established means for the removal of the disease, without effect, but the second injection of turpentine produced the menstrual discharge, and the insanity dependent on its retention was removed. It was not, however, always so effectual. He had employed it in a case now in the hospital, without success. Two injections had been given daily for some time, but the catamenia had not appeared. He thought that he had given the turpentine a fair trial in that case, and had therefore discontinued it. He had since ordered a slight injection of the liquor ammon. subcarbon. per vaginam, as recommended by an Italiau physician, but without as yet doing any good.—*Lancet, July 25th*, 1835.—*Ibid.*

21. *Breschet's Operation for the Radical Cure of Varicocele.*—The honor of increasing the domain of curative surgery, by a radical treatment of varicocele, appears to have been reserved for M. Breschet. This distinguished surgeon has, in fact, devised a plan, simple as it is ingenious, by which the most inveterate scrotal and spermatic varices are completely and expeditiously removable. I shall proceed to lay before your readers a brief account of this plan, accompanied with a case in which it was employed. I make choice of the first case in which M. Breschet operated, in order that the attendant difficulties of a first trial may not be concealed, and, at the same time, that the timid may not imagine them greater than they really were.

The patient was a servant, æt. 29, robust, and of strong constitution, who, so early as the age of fifteen, had perceived a difference in the conformation of the testicles. Some years afterwards, a tumor and varicose dilitation of the left scrotal veins became evident. The patient was frequently obliged to give up his ordinary work. He was admitted into the Hotel-Dieu, May 27th, 1833.

The diagnosis of the affection was easily established; the usual symptoms of spermatic and scrotal varicocele existed in a very marked manner. Many of the dilated veins of the scrotum equalled in size the auricular finger; and a fasciculus of vessels, united so as to form a considerable mass, originated at the cauda of the epididymis, from which point they followed the course of the cord to the external abdominal ring. The vas deferens was recognized by the characters which are peculiar to it.

The usual palliative treatment was prescribed, and its use continued during a month. The veins of the cord and scrotum, during

that period, became slightly diminished in size, but the increase of volume, which followed the erect position, clearly indicated that the treatment had been, indeed, but palliative. Pressingly urged by the patient, M. Breschet thought of putting into execution a mode of treatment for a radical cure, the idea of which he had previously conceived. The principle upon which it was based, was the obliteration of the affected vein *by compression*. The compression was at first produced by small iron pincers, the pressure of which always equal, and resulted from the simple elasticity of the branches of the instrument. But the difficulty of using these pincers, their occasionally too great pressure, and the impossibility of padding their metallic surfaces, induced M. Breschet to use in their stead others so formed, as to permit the part destined to come in contact with the scrotum to be covered with soft linen, or leather, and the pressure to be graduated at will, by means of screws.

The instruments were at first applied on the veins of the scrotum, at the extremity of two of the most voluminous of them; care being taken to leave no considerable anostomosis between the two points compressed. Their presence determined slight local pain, and the trifling inflammation which followed, was combated by emollients, resolutives, and repose. On a second application, the pain was much less considerable; the graduated compression caused a thinning of the skin, and, bringing the two opposed portions of that membrane into contact, produced a dry eschar, solid, thin, and transparent, resembling parchment. Its detachment was followed by an lcueration of much less extent, and less painful than in the former instance. These ulcers were perfectly cicatrized in a few days; they produced no hæmorrhage. The vein remained full of clotted blood; this blood was gradually absorbed; no inflammation took place; and subsequently all traces of the existence of the vessel had disappeared. The different veins of the scrotum were successively treated in the same manner.

This success was, however, incomplete. The spermatic veins still remained. The application of the instrument to them was not so easily affected. They were surrounded by a thick skin containing fat, and the vas deferens was in their immediate vicinity. The small size of the nerves and arteries prevented their being drawn aside. The accidents to be apprehended were pain, violent inflammation, formation of a deep eschar, and denudation of the cord. For this new application the instruments were modified, so as to offer a larger surface to the part affected, and to present a curve, which should prevent the pressure of the fold of the skin. The vas deferens was excluded. The pain on the application was considerable, but removed by local means. The instruments were kept on seven days; one placed as near as possible to the external ring, the other towards the inferior part of the cord. They determined an inflammatory swelling of the parts comprised between the two pincers, and produced a superficial eschar of the part on which they immediately acted, combined with an adhesion of the two opposed cutaneous surfaces. The consequent ulcerations were cicatrized in less than fifteen days; before which time the cord had lost its knotty feel. There, however, still existed, at the cauda of the epididymis, a mass of vessels extending as far as the place of the last compression.

Two other pincers were applied; one immediately before the testis, which was drawn backwards, the other two inches higher up. They were kept on the same number of days as the preceding, and followed by some pain, inflammatory swelling, and eschars of the integuments.

It deserves remark, that the inflammatory symptoms, after this last operation, were more violent than before, and less promptly removed. The instrument placed above the testicle produced a perforation of the skin, and a solution of continuity resembling that produced by a seton. The inflammation and swelling were considerable; an abundant oozing of a sero-purulent matter existed during fifteen days, from the ulcer. These accidents were got under by emollient cataplasms and repose, and at the same time the varicose mass which had existed at the bottom of the scrotum, was converted into a small tumor, in which no trace of vessels was discoverable. The disappearance of the swelling soon permitted an examination of the testicle, which had been long lost amid the vast fasciculi of vessels. Its nutrition was found to be unimpaired, and its volume equal to that of the opposite side. The cure was perfect at the end of November.

The length of time occupied in the cure of this case, is by no means to be attributed to the method employed in its attainment, but to the various difficulties encountered in devising and having made the instruments employed, and to the caution necessary in the first trial of an operation of which the ultimate results could not, *a priori*, be fixed with any degree of certainty. M. Breschet has since operated in numerous cases, both in public and private practice, with perfect success, and obtained a cure in a much less time. I have myself seen two cases treated by him at the Hotel-Dieu, in which the cure was perfect in from four to five weeks.

It is exceedingly important that the compression be more than sufficient to induce an adhesive inflammation, with occasionally slight suppuration of the coats of the veins; such an effect would not only be insufficient, but might be injurious, from the propagation of the inflammation along those coats, or from the purulent infection of the blood. The pressure should be forcible enough to destroy the life of the part, but in a gradual manner. The mortification is confined to the part immediately acted on.—*London Med. Gaz., Dec. 13th*, 1834.—*Ibid.*

22. *Simple Fracture of the Os Femoris—Reunion—Death at the end of Two Months—Dissection.* By James Syme.—Susan Barr, aged fifty-one, was admitted on the 2d of April, in consequence of having sustained a fracture of the left thigh bone, which she stated had happened the preceding evening from being thrown down by a man who ran against her while crossing the street. The injury having been ascertained to be seated in the upper third of the bone, the limb, properly supported by splints, was placed upon a double inclined plane.

On the 15th she was suddenly seized with sickness and vomiting, and then became extremely hot and restless, with dry brown tongue and quick pulse. In three or four days these unpleasant symptoms left her, and on the 20th of May the limb was found sufficiently firm

to be freed from restraint. On the 27th she had a rigor and a return of her former symptoms, which continued with progressive aggravation until the 7th of June, when she died.

The fracture had evidently been comminuted. The broken surfaces remained *quite unconnected*, a soft bloody semi-fluid substance only lying between them. In the medullary canal there had been a deposition of osseous matter in a sort of granular state, and the edges of the fracture were united by bridges of dense bone. In this case, then, the *provisional* callus of the French pathologists was nearly completed.

It is a remarkable fact in the history of pathology, that Duhamel's theory of the reunion of fractures, which was founded on an erroneous analogy between the formation of wood and that of bone, has proved to be much nearer the truth than that of Haller and his pupils, who entertained correct opinions as to the formation and nourishment of bone. Duhamel supposed, that, in a case of fracture, the periosteum had its inner layer converted into bone, just as the inner layer of the bark of a graft is converted into wood, and that thus a connecting bridge was formed between the broken bones. When specimens were shown to him of the union extending through the medullary canal, he explained the appearance by alleging, that the *internal* periosteum had suffered a similar change; and when his attention was called to sections of old united fractures, in which a compact mass of bone occupied the seat of the fracture, he was satisfied with supposing, that the external and internal periosteum had united. Rude and crude, and ill-founded as this theory was, it approaches wonderfully near the enlightened views of Breschet and Dupuytren, who have been the first to explain satisfactorily the process by which the every-day accident of fracture is repaired. The reader is no doubt aware that the explanation formerly admitted, of an organizable substance effused from the broken bones into the space between them, and gradually hardened into bone, is quite untenable; and that the process of reunion truly consists, 1, in the formation of a capsule surrounding the fractured extremities by thickening and condensation of the neighboring tissues; 2, the deposition of bone in this capsule, and in the medullary canal; 3, the growth of bone from the surrounding osseous surfaces until the cavity is completely obliterated. The second stage is generally so far completed in from three to six weeks, that the limb regains its rigidity sufficiently to resist any moderate force, and the cure is then said to be completed; but the real cure requires at least as many months. The case that has just been related affords a striking illustration and confirmation of this process; since, if it were not for the provisional callus or bridges of new bone connecting the external edges of the fracture, the bone would still be flexible; and, in fact, one of the halves is flexible from the section having been accidentally made so as to leave the bridge more on one side than the other.—*Edinburg. Med. and Surg. Jour., July*, 1835.—*Ibid.*

23. *Prolapsus Ani Cured by Nux Vomica.*—Dr. Schwartz, in an article in a late number of *Hufeland's Journal*, asserts that the nux vomica is a specific remedy for the prolapsus ani. When the disease occurs in very young children, he administers a solution of one or two

grains of the extract in distilled water, and gives six or ten drops every four hours. The disease is generally cured, he asserts, on the following day. When the child is older, he gives fifteen drops, and continues the medicine eight days after the cure, to prevent a relapse. Children at the breast require very small doses, two or three drops of the solution. When the prolapsus has existed for some time, he adds a few grains of the extract of rhatany as an astringent.

24. *Notice of a Case of Urinary Calculus, in which Dr. J. Randolph successfully performed Lithotripsy.* By I. Hays, M. D.—Our number for November last, contains an account by our friend Dr. Randolph, of six cases of stone in the bladder, in all of which he successfully performed the operation of lithotripsy. Dr. Randolph informs us that since furnishing us with that communication, he has performed the same operation in six other cases, and in all with entire success.

Having been politely invited by Dr. R. to assist him in his operations upon the last of these cases, it has afforded us an opportunity of collecting some notes in relation to it, which, with the author's permission, we lay before our readers.

The subject of this case is one of our most respectable merchants, aged fifty-seven years, who dates the commencement of his complaint as far back as 1816; but it is only during the nine last years that he has had *marked* symptoms of urinary calculus. For two years his sufferings have been extreme, from spasms of the bladder, sometimes followed by profuse discharges of blood through the urethra, and from frequent and uncontrollable desire to urinate. He is often obliged to pass his urine every ten minutes, and the urgency of this call is so great that he is frequently compelled to satisfy it before he can open his dress, and he habitually wears a thick cloth to protect his clothes. His complexion and countenance are bad; and he has the appearance of one worn down by long and severe sufferings.

I saw this gentleman for the first time on the 28th of September, 1835. Dr. Randolph had previously sounded him, detected a calculus in the bladder, and had also ascertained by the introduction of bougies that the urethra was of sufficient size to admit Jacobson's *brise pierre*. The patient was not in a favorable condition for an operation, having had a chill the preceding night, and his bladder being so irritable that he was compelled to empty it a short time previous to our visit. Dr. Randolph however introduced Jacobson's instrument more particularly with a view of exploring the bladder, to ascertain its condition and the size of the stone, than with an expectation of being able to proceed further with the operation; but the stone being readily caught and the patient suffering less than was anticipated, the calculus was twice caught and readily crushed, before the instrument was withdrawn. It was not thought adviseable to do more at this time, in the existing condition of the patient.

I again visited this patient on the 1st of October. He had passed since the operation, a considerable number of fragments of the calculus. These consisted of small granules cemeted together, and presenting the appearance of a mulberry calculus. The patient thinks himself benefited by the operation. Dr. R. introduced Jacobson's instrument; this part of the operation occupied but five seconds; in

five seconds more a calculus was seized. The stone was caught and crushed four times, the instrument freed from the adhering fragments and withdrawn, and the whole operation completed in a few seconds less than five minutes.

The patient was seen by me for the third time on the 15th of October. His general appearance was much improved, and he expressed himself as greatly relieved. He had passed a number of fragments since the last operation, and now thinks that there is one remaining too large to pass the urethra, as he states that he feels it occasionally entering the neck of the bladder, which causes him pain. Dr. R. introduced Jacobson's instrument, caught several times some fragments and crushed them.

At the request of Dr. Randolph, I this day, (Oct. 25th,) sounded the patient and could not detect any fragments in the bladder. The exploration did not occasion the patient any pain. The appearance of the patient is now greatly improved, his complexion and countenance are good, his spirits excellent. He says that he is entirely well, can retain his urine four or five hours, and walk as actively as any one. It will be perceived that this case was completed by three operations, and in the short period of but little more than two weeks. From the quantity of fragments collected, we should suppose the stone was of the size of a small walnut.

We questioned this patient after each operation and again to-day respecting the pain he suffered from them. His answers have always been the same, that the pain "from the operation was nothing compared to what he often suffered from the spasms of the bladder." Indeed he never uttered a groan, or desired that the operation might be desisted from. He now says that the principal pain he experienced, was "during the working of the instrument," that as soon as this was stopped or the instrument withdrawn, all pain ceased, leaving only a slight smarting or soreness at the end of the penis. After each operation he experienced marked relief. We were particular in our inquiries respecting the pain suffered from the operation, and have stated the answers as we received them, nearly in the words of the patient, because, much difference of opinion exists on this point. It is one, however, not readily settled, inasmuch as we have no positive measure of pain, and moreover, its degree must vary in each case, according to the condition of the bladder, the sensibility of the patient to pain, and finally, it must depend in no small measure upon the kind of instrument employed and the skill of the operator. We must not conclude these imperfect notes without expressing the admiration we experienced at the neatness and skill displayed by Dr. R. in his manipulation, upon which in no small measure must depend his great success.

II. ANALYTICAL.

Art. I.—The late Dr. David Hosack.

The great commercial emporium of the Union, has not as yet produced a physician of more extended fame, than the able man whose name is prefixed to this article. Our earliest *medical* recollections, connect themselves more or less with his reputation. For the first quarter of the present century, but few American physicians were more incessantly occupied in the practice of the profession, in teaching and in writing. Residing at a spot so distant from the theatre of his birth and death, we cannot do better, than borrow from our cotemporary, the *Un. St. Med. and Surg. Jour.*, for Jan., 1836, the following notice, which has reached us in time for this purpose, in consequence of the delay attendant on the issuing of this number.

"The medical world, and the cultivators of the fine arts, have recently been deprived of one of their brightest ornaments, by the recent demise of the distinguished individual whose name we have placed at the head of this notice. Dr. Hosack died of apoplexy, accompanied with paralysis of the right side, after an illness of five days, on the evening of the 22d of December, ultimo, at his city residence in Chambers-street. He had just passed his 66th year.

"Dr. Hosack was born in the city of New-York, in August, 1769. His father was by birth a Scotchman; his mother, a native of New-York. Dr. Hosack received his earlier education first in Columbia College, but subsequently took the degree of A. B. at Princeton, New-Jersey. He was a private pupil in medicine and surgery under the care of the late eminent Dr. Richard Bayley. He graduated M. D. at the medical school in Pennsylvania, in 1791. Shortly after this period, he entered upon the practical duties of his profession in Alexandria, in Virginia; but the limited sphere of that place not corresponding with his wishes, he returned, after a short experiment, to his native city, and finding that many of the cultivators of the healing

art, in order the better to secure a becoming patronage, had terminated their medical studies in Europe, he determined to set out for the Scottish metropolis, which then justly boasted of its far-famed university. Thither he repaired, and passed his terms at this renowned school, and formed a large circle of literary and scientific acquaintance, with whom he maintained a correspondence up to the last of his life. Upon his return to New-York, in 1795, he formed a connection in business with Dr. Samuel Bard, subsequently the second President of the College of Physicians and Surgeons in this city. Dr. Bard was eminently distinguished by his professional merits and by his widely extended practice. Upon his retirement, Dr. Hosack assumed the entire responsibility; and for a period of nearly forty years, was recognized at the head of his profession in his native place. The limits of these obituary remarks forbid us to dwell upon his peculiar characteristics as a physician; though it deserves to be stated that his practice partook largely of the anticipating method of cure: the temporizing expedients of the expectant system found little favor in his views. As a teacher of several branches of medical science, he also merits special notice. He was first appointed professor of Botany in Columbia College, in 1795, to which was shortly after added the Materia Medica, both chairs of which he held till the dissolution of the medical faculty of that institution in 1813. Upon the organization of the College of Physicians and Surgeons in the city, by the Regents of the University, tn 1807, he was appointed professor of Obstetrics and lecturer on Surgery. The former course he delivered during the first session of this new school of physic. Upon the re-organization of the College in 1813, and the union of the faculty of Columbia College with that of the College of Physicians and Surgeons, he was appointed professor of the Theory and Practice of Physic. This branch of study he continued to teach until 1826, when causes not now necessary to dwell upon, induced him, with his colleagues, to resign his appointment. Upon the establishment of the Rutgers' Medical College, he again resumed the duties of professor of the Practice of Physic and Clinical Medicine, which he fulfilled with his wonted ability until 1830—31. As a teacher of the several branches of medical science, and particularly of the practice of physic, it may be safely said that he has never had a superior in his native country, as the practical expositor of clinical medicine. The thousands of students who have witnessed the illustration of his precepts in his attendance as physician at the New-York Hospital, will bear testimony to his medical tact and efficiency.

Dr. Hosack was the author of numerous medical papers and essays; many of them monographs on particular diseases; besides occasional addresses and discourses. He was unanimously elected Fellow of the Royal Society of London, in 1816. In connection with his partner in business, and subsequently his colleague in the University, he for several years published a medical journal, the American Medical and Philosophical Register, 4 vols. 8vo. edited by David Hosack and John W. Francis. His various medical writings have been brought together in 3 vols. 8vo; in the third volume of which he has detailed at great length the vicissitudes which have marked the progress of the profession in New-York, both by individual difficulties and legislative measures. His writings on the yellow fever have been long

familiarly known. He was the advocate of the specific character and contagious nature of that disease. The first edition of his Practical Nosology appeared in 8vo, in 1819. His Memoir of De Witt Clinton, in 4to, in 1828. A more disinterested tribute to the memory of a great benefactor, never was given to the public. Of his merits as associated with the New-York Historical Society, as President of the Literary and Philosophical Society of New-York, and as connected with other public institutions and private undertakings, we forbear at this time to speak. He deserves, and will doubtless receive, the just consideration of his various merits by some surviving friend, adequate to the responsible task. His remains were accompanied to their place of interment in the marble cemetry, with a regard which became so distinguished a character.

"In conclusion we may venture to say, that in the Death of Dr. Hosack the medical profession has lost one of its most substantial pillars; and that the many productions of his pen will be held in esteem side by side with those of the lamented Rush."

Art. II.—Radical Cure of Hernia.

We have more than once taken a favorable notice of the invention by Mr. Stagner, of Kentucky, of a wooden headed truss, for the *radical* cure of Hernia. Mr. S. is not a professional man, but his suggestion soon attracted the favorable notice of the medical gentlemen of the region in which he resided, and among the rest of Dr. Hood, a graduate, we believe, of Transylvania University; who visited the eastern cities and sought to attract to the invention, the notice both of the people and the profession, and considerable success attended his efforts. It was soon discovered, however, that the form of Stagner's wooden pad (which was invariable) did not answer for every case; and this led to efforts, by different surgeons, to effect such modifications of figure, as might render it of general applicability. Among those who have exerted themselves in this laudable object, are Dr. Hood, whom we have just named, and Mr. Chase, of Philadelphia; each of whom has produced modifications of size and form, calculated, or at least intended, to augment its advantages. The deep interest of the subject, induced the Philadelphia Medical Society, to appoint a committee, "To investigate the character of Stagner's Truss, and other proposed means of

radical cure in Hernia," and on the 5th and 12th of December, 1835, the committee, consisting of Drs. Reynell Coates, William Ashmead, and Isaac Parrish made their report, which was published in the American Journal, and from which we propose to give a few extracts.

After the citation of a number of cases, going to show the efficacy of the modifications of Stagner's block in restraining and curing Hernia, the report presents us with the following testimony as to the former point:

"The committee are decided in the opinion, that the retentive power of solid blocks exceeds, *cæteris paribus*, by considerable difference, that of pads composed of softer materials. If there could be any exception taken to this rule, it would be in favor of pads formed of very firm but highly elastic materials; but the only substance of the latter character, now employed in the construction of truss-pads, is the gum elastic, and against the direct application of caoutchouc to the skin, there are strong physiological objections. Moreover, the committee is by no means prepared to advocate the superiority of elastic pads, in the present state of their knowledge. Whatever they may gain in facility of application, they lose in certainty of action. The great excellence of the solid truss-block is its perfect precision, and if required to adapt itself to changes of position in the part to which it is applied, it can be enabled so to do by the elasticity of the spring of the truss.

Two circumstances should be stated in this place;—the incompressibility of very firm pads and hard blocks, renders it of the utmost importance that their form should be accurately adapted to the particular parts on which they are designed to act, and that they should be carefully placed and secured in correct relation with those parts. Carelessness in either of these respects would incur dangers, grave in just proportion to the power and usefulness of the apparatus. Hence considerable anatomical and surgical skill are requisite, both in the contrivance and the application of trusses armed with such pads or blocks, and they can never be permitted to pass, with safety, out of the hands of surgical scholars and practitioners. Again, the application of such machines, in early infancy, is deemed by the committee both unnecessary and improper.

With regard to other dangers and inconveniences, your committee will merely remark, that the charge of danger of general peritoneal inflammation from the communicated irritation of the blocks, when their application is directed by competent skill, is deemed nugatory, and in opposition to both well-known pathological laws and the direct evidence of experience. The danger of suffering from the production of external inflammation is, in general, slight and unworthy of much thought, and when epidemic tendencies or peculiar states of constitution render the patient liable to diffuse inflammation of the cellular tissue, the danger from the irritation of the blocks, even when employed with force, in order to carry out the theoretical indi-

cation mentioned in the commencement of this report, is certainly not greater than that produced by very trivial and unavoidable accidents, such as slight scratches and abrasions on other parts. But even the correctness of the doctrine which attributes the radical cure to extensive adhesions and callosities, is of very doubtful character, and the necessity of employing the blocks in such a manner as to produce considerable irritation, is by no means decided. The committee, therefore, think that these alleged dangers do not appreciably affect the permanent retentive power of the apparatus.

There is apparently one slight additional security against the descent of the bowel in inguinal and certain other hernia, which is often consecutive upon the use of the hard block for a moderate length of time. This is the rapid absorption of the deposits in the subcutaneous cellular tissue, and sometimes in the dermoid tissue also, which permits the block to act almost immediately upon the tendinous canal, thus effectually closing the neck of the hernial sac, of which it very probably produces the obliteration. It is possible that the temporary security produced by this means, which very slightly opposes the formation of a new sac, has been a cause of deception with regard to certain cases reported as radical cures, but which have been subjected to relapse. Several cases of this character have been before the committee, but they deem it inexpedient to dwell upon the subject farther than to caution the profession generally against hasty conclusions on medical and surgical questions.

In regard to the retentive power of particular blocks, the committee are prepared to express their warm approval of the inguinal block of Mr. Chase, in which, at present, it can suggest no improvement. It also approves of Dr. Hood's ventro-inguinal block, with the parabolic projection, but considers a more perfect instrument, to fulfil the same purposes, both possible and desirable. The same sentence is pronounced upon the femoral block of Mr. Chase; but in the latter case some very important amendments have been made, which appear to meet the views of the committee, and will be verbally commented upon at the close of this report. Their practical application will be made the subject of future investigation.

The committee feel some regret in condemning the mechanical principles upon which the concave ventro-inguinal, the femoral, and the more complex umbilical blocks of Dr. Hood, are constructed, the action of the second of these instruments having been proved inefficient in certain particular cases within the knowledge of the Society generally. The evidence with regard to the action of the common inguinal blocks of Mr. Stagner and Dr. Hood, has been already offered, and of course they fall under the objection of uncertainty of retention. The committee do not deem it necessary to be more explicit in commenting either upon these blocks or upon the drawers, belts, or other apparatus mentioned in the specification of Dr. Hood. They hold themselves prepared to meet, if necessary, any remarks upon these questions during the subsequent debate. With regard to their opinion of the other umbilical blocks, a judgment has been expressed already."

On the very important question of a *radical* cure, from the use of the wooden block, the report holds the following language:

"With respect to the question of the radical cure of hernia, by means of the best of the instruments which have passed in review, it should be borne in mind, that success in cases of umbilical hernia in young children, is almost general, when methodical bandaging has been judiciously employed. That in other varieties of hernia, affecting subjects of similar ages, success is by no means rare, under the operation of trusses with soft pads; that in children over ten years of age, it becomes rather uncommon; that in youths between the age of puberty and that of twenty years, it becomes rare; and after the latter period, *very rare*. These remarks premised, the committee are of opinion, that the chances of radical cure depend mainly upon the retentive power of the apparatus employed—and their opinion on this subject has been already expressed. It would be wrong to enter upon the calculation of probabilities, without much more extended observation than has yet been possible, but the committee have no hesitation in stating that the action of the several blocks recommended in the last section appears to offer much more prospect of radical cure, even under unfavorable circumstances, than any apparatus previously offered to the public, and which has fallen under their notice after considerable research."

As to the *modus operandi* of the block, in effecting a radical cure, the committee incline to the opinion, that an accurate, perfect, and constant retention, of the protruding part, is far more important than the excitation of inflammatory action. We shall not follow them in their reasonings on this subject, which embrace a reference to the spontaneous closure of the *tunica vaginalis testis*, in childhood; for no certainty will attend our knowledge on this subject, until accumulated dissections shall have been made of those who have been radically cured; and of course this will require the lapse of many years.

In the conclusion of their report, the committee express themselves on the authorship of these inventions in the following language:

"The question of novelty is one in which the committee feel but little interest, being convinced that that of utility is of vastly more importance, but it will merely remark, in passing, that the almost endless variety of forms given to truss pads from time immemorial, and the generality of the directions for forming them, as given by the highest surgical authority, would make it a task as vain as useless to render *suum cuique* in this department of surgery. The blocks of Mr. Chaise, are, however, mathematical figures, capable of accurate expression, and, if it be thought necessary, the committee will endeavor, under the injunction of the society, to investigate his individual claims. In most of the other cases, they regard the inquiry as nearly hopeless.

If originality on the score of the material used in the construction of the blocks be claimed, the committee can only state its inability to recall any instance of the use of wood as a pad in hernia, occuring under the observation of its members prior to Mr. Stagner's invention, but it has been long familiar with the use of ivory."

We shall terminate this notice, by referring the reader to the cover of this number, for the advertisement of Dr. Crittenden, who is sojourning in Cincinnati, as the agent of Mr. Chase, and will undertake to apply wooden headed trusses in all cases that may be presented to him.

ART. III.—CALL OF THE MARYLAND ACADEMY OF SCIENCE AND LITERATURE.

We have lately received a Circular from this Association, designed to make known the destruction of its collections by fire. Through its President, P. Macaulay, M. D., and its Secretary, J. Mason Campbell, the Academy makes an appeal to similar associations, and to men of science throughout the Union, which we trust will not be in vain. All institutions for the cultivation of our natural history, should be regarded as members of one brotherhood, and stand ready to assist each other, in calamities which cannot be repaired, like those of ordinary property, by the expenditure of money. But we shall let the Academy speak for itself, in the following extract:

"THE MARYLAND ACADEMY OF SCIENCE AND LITERATURE, having lately had the misfortune to lose its valuable Museum and Library by fire, respectfully and earnestly appeals to those who feel a common interest in its pursuits, for aid in repairing its loss.

The assiduous labor of nearly thirteen years had amassed for it a large number of costly literary and scientific works, an extensive collection of minerals, specimens in almost every department of Natural History, and many coins, medals and antiquities. In commencing anew the work of accumulation, much, it is persuaded, can be done by the contributions of the public and similar Institutions. Most of such societies and many individuals possess superfluous specimens and duplicates of Books, of but little or limited use to themselves, while of value to those who are without and need them. To associations or individuals who have it thus in their power to aid the Academy, it cannot be necessary, for securing that aid, to address any considerations. The cause of science and literature, is one of no merely local or private concern, but possesses an interest and importance of the widest character, and its followers, in what place soever they urge its extension, must be counted as of one brotherhood. To the same end all co-operate, and it no doubt must be the impulse of

feeling, as it certainly is the dictate of duty, that each, where it is possible, shall lend encouragement and assistance to the other.

The collections which the Academy seeks to make, embrace all that can claim the attention of the literary and scientific. They include minerals, shells, fossils, specimens in Natural Science, books, coins, aboriginal antiquities, maps and documents illustrative of the history, geography, or literature of any portion of the world, and in particular of Maryland. Unpublished barometrical or thermometrical observations—descriptions of celestial or terrestrial phenomena, and State Statistics which have never been given to the world are likewise among the means of information which it seeks to gather and make useful. Donations coming under the above description, or aught else that can attract the observation of the curious, or stimulate the inquiries of the learned, will be thankfully received and acknowledged."

Art. IV.—Diet.

Doctor Bell, of New England, has lately written a spirited prize dissertation on diet, which has been published in the Boston Medical and Surgical Journal. It possesses some interest, althongh it embraces nothing new, being mostly a collection of the various facts already known to the profession. The doctor seems to be correctly opposed to the doctrine of some of the visionary lecturers of the "Land of steady habits," in his remarks on diet. After many reflections he arrives at the following conclusions: W. W.

1. A diet of *both* animal and vegetable food is adapted to the condition of the New England laborer.—2. No grand errors exist in his present system of diet, and no radical change is demanded to ensure a greater amount of health and strength, though many minor, but still important, errors exist.—3. The proportion of animal food usually customary is too great, and a considerable reduction would be expedient and advantageous, though it is impracticable to make a precise statement of the extent to which this is required, which must depend upon circumstances, as amount of labor performed, climate, season, bodily constitution, habits of life, &c. A general statement of this fact can alone be made.—4. The amount of food in general, customarily used, is more than is necessary for the maximum of health and strength, though a more specific statement of this abuse is also impossible. It must be left for each individual to attempt to reduce his quantity of food to that point at which he finds his mental and bodily powers most energetic. In searching for this point the New Englander may be almost certain that he must look for it in a descending ratio.—5. The great principle in regulating diet is to regard quantity rather than kind.—6. Perfect mastication and slow deglutition are important auxiliaries to the proper digestion of food.—7. A great variety of alimentary substances taken into the stomach at once, are calculated to do injury on several accounts.—8. The employment of alcoholic stimulants, and hot aqueous drinks, is deleterious to the functions of the stomach and to the general health.—9. The times of taking food, the state of the mental and moral functions, the quantity and times of exercise, &c. are all subjects of importance in the general subject of dietetics;—in these particulars, the habits of the New England laborer do not vary much from a healthful standard.

III.—ORIGINAL.

The Western Journal.

E Sylvis Nuncius.

CINCINNATI, JANUARY 1836.

Art. I.—Our Periodical.

At the moment when our last number was about to issue from the press, we found ourselves turned over to new publishers, which to an editor is a kind of turning over of a new leaf. We should have published the fact to our distant friends, if a single page of our last sheet had remained open. Since we commenced editing this work (the oldest periodical journal in the West,) in 1827, we have been so often turned over, that it seems to us as matter of astonishment, that we have not been overturned. Counting on our fingers (in any thing but a poetical reverie) we find, that already, before the completion of our ninth volume, we have owed allegiance to nine publishers! Thus, if our editorial vitality had not been truly feline, we should now be defunct. We are far from complaining of these vicissitudes, seeing, that as meteorologists, we were long since instructed in the necessity of change to preserve the purity of the atmosphere. Nor are we inclined to quarrel with the gentlemen who have transferred us, howbeit, we are well known to be an humble but ardent member,

of the *genus irritabile.* If we have run the gauntlet, no malign torture has been inflicted on us; and, we have at last the consolation to know, that those for whom we cater, are highly respectable in *numbers*, and not less so, as they themselves will admit, in professional attainments and inquisitiveness. But we *do* complain of the *effects* of these rapid mutations, on the regularity of our publication. It has never been issued with the promptness which we know to be acceptable to readers, and ought to be regarded as a duty both by editors and publishers. Some cynic has said, that he who is good at apologies is seldom good at any thing else; and we are not without apprehension that the apothegm may be applied to us. Should such an application be made, we shall certainly plead guilty, for common candor would require it. To avoid this, we shall not venture on another apology nor make another promise, lest we should be compelled to look back with chagrin to its violation. As to the *present* past, why it is past, and wherefore recall it? We are not of the retrospective temperament, but prefer to live with the future: to look forward, instead of backward: to enter into imaginative sympathy with those who are to come, rather than with those who are gone: to watch the growth and development of the generation that is sprouting up around us—consider the wants of their professional minority—investigate the causes which may retard their intellectual expansion—and, now and then, write a hygienic prescription, designed to promote their mental health. Having this decided taste for communion with the young, and, at least *professing*, to feel a deep interest for their prosperity, it is a pleasant circumstance, that a majority of our readers belong to that stage of human life. We rely much on the magnanimity of that era, and assume that it will pardon many remissnesses, which a more advanced and querulous period, would condemn: we confide in its modesty, and shall, therefore, believe it ready to receive admonition. Now, having placed ourselves for a while on our editorial *confessional*, we shall fancy a goodly number of our readers, to mount the

chair, and give some account of *themselves*. In reply to the question, why they do not observe, experiment, register, and write for the journal which they patronize as readers, what can they say? One answers, that he has not time—no, indeed, his business is too extensive;—he sees and does so much, of that which ought to be recorded and published, that he has no leisure for either! Another is unworthy to appear in print;—*his* imperfect observations could add nothing valuable, to the stock of facts already accumulated—*his* powers of intellectual analysis can decompose nothing intricate—his excursions can lead the profession into no unexplored region! To such an one we say, it requires *more* talent, to practice the profession successfully, than to report the results to the world. Another cannot write, because, his professional business not being quite large enough, he has superadded something else, that he might "make money," a little faster:—this has diverted his thoughts from science—the hours not employed in visiting the sick of his town or village, must be devoted to an inspection of vacant lots and dilapidated houses! Speculations in land have supplanted speculations in philosophy, and avarice has asphyxiated ambition! But such an one has already lost *caste* in his profession—he has sunk to a lower level in society—and should have the sense of propriety and duty, which would lead him to withdraw from that which his personal presence cannot but desecrate! Others, again, intend to write when they get older. They may, we admit, *publish* when they get older, but they must write when young; and we have observed, that in general, those who do not publish do not write. A young physician may distrust his powers of philosophical analysis, his ability to trace out new principles, his capacity for arranging them into new systems, but no young physician, need to doubt his ability to observe and report new cases and facts, and these are as likely to present themselves to the young as old. Away then, we say, with these various excuses, and let all who would see the medical profession of the West, ascend with the general structure of society, come forward and raise

that profession, and themselves, and the WESTERN JOURNAL, with the contribution of every thing that is valuable in their experience. Thus they will instruct each other, and make our periodical, when it wanders, out of the Great Valley, what it professes to be — E SYLVIS NUNCIUS.

ART. II. — THE MEDICAL DEPARTMENT OF THE CINCINNATI COLLEGE.

The July number of our Journal, set forth, in its appendix, an account of the organization, in this city, of a new Medical School, under the auspices of the CINCINNATI COLLEGE. It went into operation at the time proposed, and the delay in the publication of the present number, enables us to introduce, as a supplement, the first catalogue of students, and, also, a list of the graduates at the first Commencement, which has just taken place. The former will be found to be sixty-six, and the latter eighteen.* The same supplement contains a notice of the future sessions of the school; and of a summer Institute, to which most of the professors belong.

Connected as we are with these projects, it does not become us to pronounce decisively on the omen which the success already attained affords, but we cannot resist the opinion that the prospects of the new school are highly auspicious. If we mistake not, there has not, before, been so numerous a class, in the opening session of any other medical institution in the Union, nor one made up from so many different quarters. The first class of Transylvania University was twenty; the second thirty-eight; the third but ninety-three: —The first class of the Medical College of Ohio was twenty-five, the second thirty, and it required five years more to enable it to reach the number with which the Cincinnati College has begun.

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*Of these eighteen, three had been practitioners for four years, two had attended a course of lectures in the Philadelphia schools, and thirteen had been pupils in the Medical College of Ohio.

It was not till the latter part of the month of May of the last year, that the Medical Department of this Institution was projected. Professors were then to be obtained, a decaying edifice repaired, apparatus provided, and the medical public apprised of the undertaking. Each of these objects was beset with difficulties, but all except the last were, successfully, executed. To give adequate publicity to the enterprise, over a region of such vast extent as that from which pupils for our western schools must be derived, was found to be quite impracticable; and, it is well known, that many students arrived in Cincinnati, on their way to other schools, before they ever heard of the Cincinnati College. When they came to this knowledge, they discovered, moreover, that a majority of the professors had not belonged to any medical school, and it was of course impossible for them to know, in what manner these new professors would acquit themselves. We are happy to be able to say, that all who have thus appeared before the public for the first time, have, as far as we can learn, discharged their respective duties, to the admiration of their pupils, and that they fairly promise to become distinguished teachers.

The great departments of Anatomy—special, surgical, general, and pathological,—and of Physiology, confided to two professors, are already well supplied with preparations both healthy and morbid; the number of subjects for dissection has amounted to twenty-one, and, if more had been required, there would have been no difficulty in obtaining them. The cost to the students was eight dollars each. The chemical laboratory is, also, furnished with all the variety of apparatus required for a complete course of general and pharmaceutic chemistry. These different departments are supplied with amphitheatres of the best construction, and capacious enough to receive, each, 300 students. We have spoken especially of the arrangements made for the benefit of these professorships, because, of the whole they require the greatest amount of preparation, and are most inquired after by students of medicine; but we may say of the others, that they are pro-

vided with the requisite means of illustration; and that, in the whole Faculty, there is a spirit of activity and perseverance which cannot be quenched by ordinary causes, and will stimulate them to unwearied exertion.

Art. III.—Tribute of respect to Professor McDowell.

The dissecting class of the Cincinnati College, in the month of February, presented to Dr. McDowell, a beautiful silver vase, with a suitable inscription. We did not witness the little ceremony, which took place in the anatomical theatre, but have understood, that Mr. Johns, of Tennessee, pronounced on the occasion, in behalf of his fellow students, a chaste and appropriate address, which was answered by the young professor with his characteristic fervency.

Art. IV.—Memoir on the nature of Miasm and Contagion.

Read to the Cincinnati Medical Society, Feb. 3d, 1836. By John L. Riddell, Adjunct Professor of Chemistry, and Lecturer on Botany in the Cincinnati Medical College.

(Concluded from page 412.)

To use his own language, "the results obtained prove very clearly that, in marshy places, during the precipitation of dew, there is an organic matter deposited with it."

Since most of this memoir was in type, I have made some experiments with a view of detecting the aerial miasm of small pox. A perfectly clean ounce phial was half filled with distilled water; a small glass tube with a capillary orifice was made to terminate near the bottom, the upper and much larger portion of the tube bending horizontally to receive the silver nozle of a delicate pair of bellows. Several turns of gauze were passed around the mouth of the phial embracing the tube, and the whole was securely fixed in an appropriate wooden frame-work.

On the fifteenth of February the apparatus was carried to the city pest house, and under the superintendence of Dr. O. M. Herron, it was placed on a table two or three feet from a small pox patient, just in that stage of the disease when the circumambient air is supposed to be most contagious. The bellows were blown by the nurses pretty constantly, for twelve hours, thus presenting a great amount of noxious air to the distilled water. The apparatus was left undisturbed until it came into my hands three days after, when I made the following experiments:

1. One fourth of a drachm of the water contained in the phial, evaporated very slowly in a watch glass, over an alcohol lamp, left concentric circles of a whitish substance. Upon bringing this residue under the object glass of a good microscope, I discovered that it consisted mostly of long crystals, which shot from each other at right angles. The outer margin of each concentric band was less distinctly crystalline, and evidently contained some other substance.

2. A minute drop of sulphuric acid, (carefully distilled and collected on a glass rod, so as not to leave the slightest trace upon being evaporated from clean glass,) was placed upon some of the residue, (experiment No. 1.) Upon the application of heat the acid became black, and upon complete evaporation a dark stain was left; thus showing the presence of organic matter.

3. Upon adding a drop of pure sulphuric acid to near an eighth of a drachm of the water, and expelling the water by a careful heat, the acid became black. This experiment, as well as the one which follows, was performed upon a piece of Florence flask, rinsed in clean water and then heated to redness over an alcohol lamp, in order to remove every trace of organic matter.

4. A drop of the water hastily evaporated, left a whitish residue, not crystalline to appearance, but consisting of extremely minute grains. Upon the application of a high heat short of redness, it became dark colored, indicating the presence of organic matter, by the charcoal liberated. A still

higher heat, in contact with air, removed the dark color and left a mere trace of white adherent powder.

These results compel us to believe, that organic matter was communicated to the distilled water by the air which was transmitted through it. This matter did not exist in the air by virtue of its volatility, else in the first experiment it would have been dissipated by evaporation. It was most likely in the form of organized corpuscles, sustained in the air by their exceeding small size.

I was somewhat puzzled with the appearance of crystals in the first experiment, not expecting to see anything more than a gelatinous substance. Upon examining distilled water subsequently, through which the human breath had been passed for several hours, a tissue of delicate arborescent crystals was left after evaporation. I have only time to offer a crude and premature conjecture. May not these saline matters have been borne mechanically into the air, in the one case, muriate of soda from the perspiration of the patient, in the other, a saline substance exhaled in respiration?

About two drachms of the water through which variolous air had been passed, was hermetically sealed in a clean glass tube, leaving a space filled with air above the liquid, equal to one fifth its capacity. The tube has been kept upright in a situation where the temperature is pretty constantly 72 deg. Fahr. An ash-colored sediment soon appeared, which continues to increase. Examined with the microscope a week after it was first adjusted, the sediment appears to consist of numerous, irregular, partly filamentous, ragged masses, with here and there a perfect globule about twice the size of the globules of human blood. The filaments, which may be seen with the naked eye, are seldom arranged in a regular branching manner. After all, we cannot consider these experiments as decisive; for it is evident that in transmitting air even through a capillary tube, mites and filaments of organic dust from the bed clothes etc., may have been sent into the water and retained.

A great law seems to pervade and control all nature, as we rise above the lifeless aggregate, occult, indeed, and incomprehensible in its cause, but not the less obvious in its effects. I refer to the degeneration of races. One race or variety will flourish and endure for a time; but at length it begins to degenerate, and is finally succeeded by other kindred varieties, which have their day, and in like manner yield their places. From the influence of this grand custom, even man himself is not exempt. The Indian is fast disappearing from the forests and plains of America, and where stood his rude wigwam, or where he made war upon the beasts of the wilderness, the white man builds his house, or taxes the fertile soil for the means of wealth and comfort. The mastodons, plesiosauri, and gigantic cycadeæ, of very ancient times are now unknown upon the earth. They are extinct, and beings of modified structure and different habits have succeeded them. Illustrations of this law are constantly presented for our contemplation, in the limited duration and decline of esteemed varieties of fruits and esculent roots; as in the apple, pear, potatoe and yam.

The temporary predominance of certain insect races, of which there are many striking instances on record, seems to have a relevancy to the present subject. I will merely cite a few facts which came under my personal observation. In the spring of 1833, the leaves of the buckeye (*Æsculus ohioensis*) were infested and devoured to an incredible extent, in Franklin county, Ohio, by the larvæ of a small yellow miller. So far as I know, the buckeye has not been infested since.

Some twelve or fifteen years ago, I well remember, that for a mile or two on each side of the Chenango river, New York, every individual sugar maple (*Acer saccharinum*) was destroyed by the depredation of a large caterpillar, which, neither before nor since, has ever made its appearance in sufficient numbers to attract common observation. No thinking mind, I imagine, will fail to trace a close analogy, between the temporary prevalence and anomalous succession of epidemic diseases, and the occasional appearance, in such vast numbers of these destructive races of insects.

Bearing in mind the modifications of which animal races are susceptible, under the influence of altered circumstances, and recollecting the brief hours and minutes which are sufficient to give full maturity to certain animalcules, we may, perhaps, understand why, when the same epidemics prevail at intervals of many years, they are apt to assume different aspects; being at one time quite mild, at another attended with great mortality; giving origin to symptoms in some instances which are unknown in others.

If, then, we admit the presence of living corpuscles in miasmatic air, there are many who would be inclined to suppose, that these corpuscles must possess a very complex organization, to enable them to maintain themselves in that medium. The presence of external organs equivalent to wings, might, by some, be deemed necessary to effect that end. We have, however, the best of all possible reasons, short of demonstration to the senses, for believing that no such necessity exists:—a reason drawn from mechanical philosophy.

Bodies when of very small dimensions, no matter how dense their texture, encounter a degree of resistance in falling through material media, which essentially retards their velocity. Larger bodies do not experience this resistance in so great a degree, because they present less surface in proportion to their weight. Very minute bodies, in falling through the atmosphere, soon acquire nearly a maximum velocity, which they do not exceed until they reach the earth. Dr. Thompson, in his late work on heat and electricity, says that globules of water, the thousandth part of an inch in diameter, acquire by falling through the air, a maximum velocity of nine or ten feet per second. Recognising the laws which regulate the descent of bodies in resisting media, and presuming the miasmatic corpuscles to have the specific gravity of water, I have made calculations to determine the velocity with which one of the monads, measured by Errhenberg, would be capable of falling, through such a medium as common air. The diameter of these creatures is

$\frac{1}{24000}$ of an inch:—one of them would fall near four feet per second.* A corpuscle $\frac{1}{1440000000}$ of an inch in diameter, would fall one inch per second, or five feet in a minute's time. It is therefore easy to imagine, that wingless beings, of transcendent minuteness, may float securely in the subtle air, or be borne on the wings of the winds to the most remote regions of the earth.

In the winter of 1833, I prepared several bottles of water, from clean, recently fallen snow. They were tightly corked, and kept for three or four months in the shaded corner of a room, where the water was not liable to be frozen. At the expiration of this time, having occasion to use some of the water, I observed that the lower portion of each bottle was traversed by myriads of delicate, dark colored filaments, bearing a close resemblance to some of the fresh water algæ. Upon removing the cork, a most unpleasant odor was exhaled, similar to that of animal putrefaction. No one, I presume will doubt, that the living germs of this curious organization came down from the high regions of the atmosphere, in conjunction with the snow.

The doctrine I have espoused might be elucidated still farther, if need be, by analogies from the vegetable kingdom. Perhaps nearly all the true diseases to which plants are liable, arise from encroachment by parasitic fungi and lichens. The rust which infests the culms of wheat, was found by Sir James E. Smith, to consist of highly organized microscopic fungi. We hardly know a single species of the more perfect plants, on whose mature leaves, may not at times, by careful

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*In obtaining these results, gravity is regarded as a constant force, and the air as of uniform density. Put $d = \frac{1}{1000}$ of an inch, v = its maximum velocity, 10 feet per second, m = diameter of the monad, x = maximum velocity of the monad per second.

Required, the value of x in terms of d, v, and m.

The falling body acquires its maximum velocity, when resistance = gravity. Resistance is as the square of the diameter and square of the velocity:—gravity is proportioned to the cube of the diameter.

Now, as the elements of resistance $d^2\ v^2$: to the element of gravity d^3 :: $m^2\ x^2$: m^3. Therefore, $d^2\ v^2\ m^3 = m^2\ x^2\ d^3$. $x^2 = m\ v^2 \div d$. $x = (m\ n^2 \div d)^{\frac{1}{2}} = 4\frac{1}{5}$ feet, when $m = \frac{1}{24000}$ inch.

examination, be discovered some minute and obscure species of this order; and I question much whether a tree can be found in the forest, on whose bark cannot be seen the spreading and parti-colored lichen.

In like manner do parasitic growths affect animal bodies. Do not warts, cancers, sarcomatous tumors, hydatids, and intestinal worms, possess an animal vitality insulated from that of the individual in whose body they occur? For myself, I cannot but regard them as holding about the same relation to the animal system, as the parasitic fungi and lichens do to the more completely organized vegetables.

The majority of medical writers now living, have expressed their belief in the existence of terrene and paludal emanations, which they suppose to be of a gaseous and inorganic nature. No doubt it will be often repeated, that it is unphilosophical to recognise vital corpuscles, as morbific agents, before they have been demonstrated to the sight. "Show us your corpuscles or animalcules, before you call on us to believe in their existence." In reply, it may be said, that we have infinity on either hand; infinite expansion, and infinite minuteness. The range of man's vision, though aided by all the resources of art, is but a point on an infinite line. As well might the skeptic assert, that there were no worlds, no stars, no globes of matter, save what his feeble vision descried; as that the mysterious attributes of life could not attach to beings invisibly small.

A WORD FROM THE PROPRIETORS.

The proprietors design publishing, at the close of the next number, the names of all those who have paid their subscriptions in advance. As the Journal has been irregular in its appearance in the hands of former proprietors, all payments made before the tenth of April shall be appended to the advance list. They are making arrangements for paper made expressly for the work, so that the entire volume will present a uniform appearance, both in letter and paper, as well as improving it in many other respects; consequently, the tenth volume will be attended with additional expense, and hence they hope their subscribers will pay in advance on that vol., at least. Three dollars is but a small sum to one man, while two thousand times that amount is of much importance to those who are daily paying large expenses. The editors and proprietors are determined that their work shall equal any other, both in matter and mechanical execution, in the Union. In future they expect to be responsible for the appearance of the work. Price 4 dollars at the close of the vol., 3 dollars and 50 cents at the end of three months, or 3 dollars in advance or within the first quarter.

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